ELECTRIC RAILWAY JOURNAL

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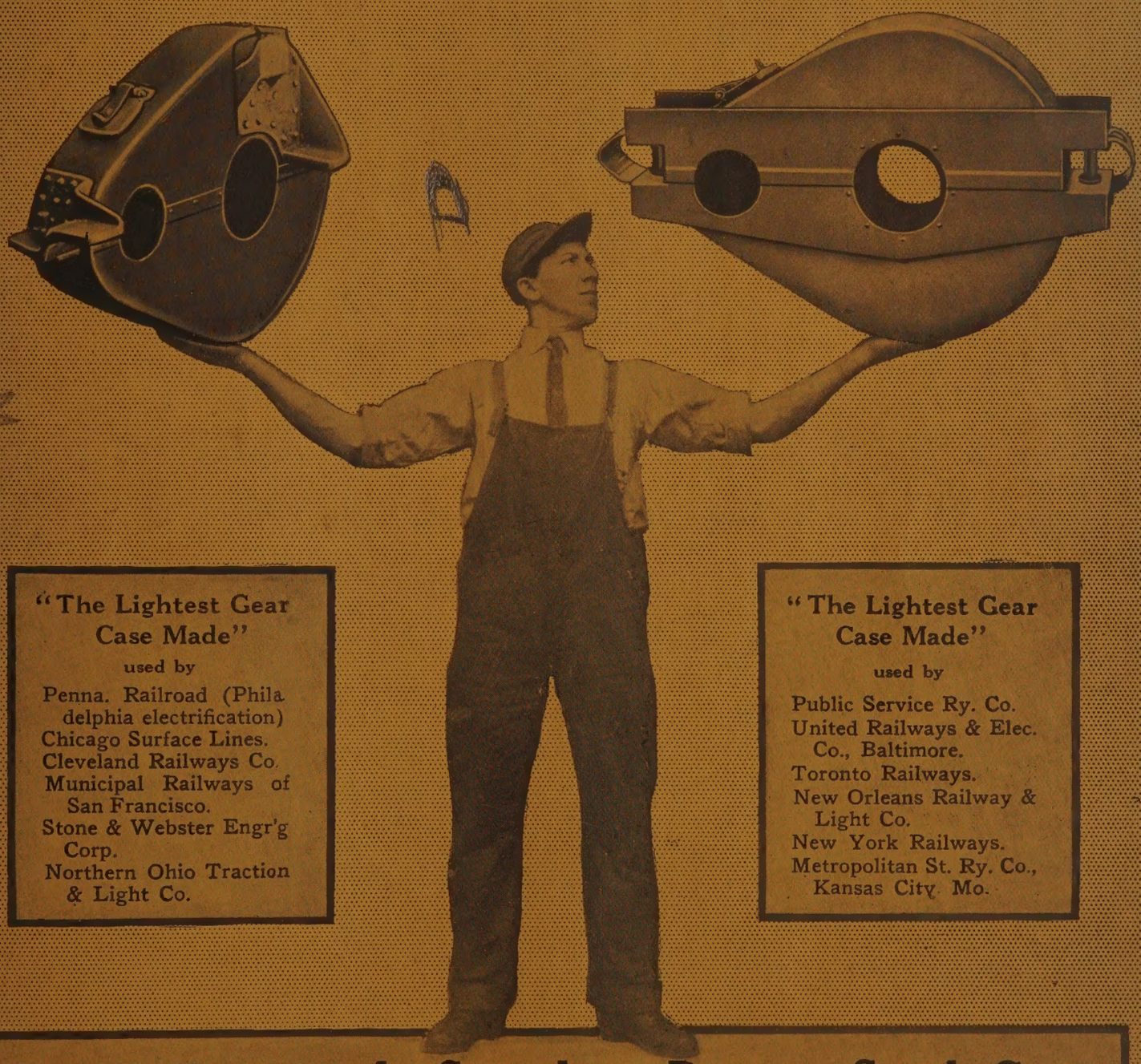

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Electric Railway Journal

New York, December 12, 1914

Volume XLIV No. 24

Contents

Pages 1281 to 1324

New Cars of Seattle Municipal Railway 84

Multiple-unit control arranged for a double trolley wire system, gearless air compressors and air-operated fenders are among the unusual features of these cars.

ELECTRIC RAILWAY JOURNAL, Dec. 12, 1914. 5¼ cols. Ill.

Fair Interest on Investment in Public Utilities 1287

H. J. Davies, secretary Cleveland Railways, discusses the claim that rates should be based on depreciated values and points out that the true criterion is the principal invested. Different values also for rate-making and taxation.

ELECTRIC RAILWAY JOURNAL, Dec. 12, 1914. 4½ cols.

Safety Work for B. R. T. Employees 1291

Moving pictures as a safety lesson for the mechanical department's men. Safety program of mechanical and transportation departments, including list of suggestions adopted by the former and employees' committee. Organization of the latter.

ELECTRIC RAILWAY JOURNAL, Dec. 12, 1914. 4 cols.

Convention of Pennsylvania Association 1293

A full report of this meeting in Harrisburg, abstracts of the various reports and papers presented are published. The topics considered included questions relating to engineering, accounting, transportation and public relations.

ELECTRIC RAILWAY JOURNAL, Dec. 12, 1914. 15 cols.

American Association News 1301

The executive committees of the Engineering Association and Transportation & Traffic Association assign subjects to various committees. Hearing on I. C. C. jurisdiction over electric railways. Meeting of joint committee on block signals. Milwaukee Company section meets.

ELECTRIC RAILWAY JOURNAL, Dec. 12, 1914. 6 cols.

Equipment and Its Maintenance 1304

An Ingenious Interline Register System—*By C. L. Keller.* A Home-Made Line Car—*By H. E. Wurzback.* Rebabbitting Journal Bearings—*By W. L. Fulton.* Equipment Defects—Control Apparatus and Connections—V—*By C. W. Squier, E.E.* Snow Removal in Montreal. Testing the Equilibrium of Double Deck Buses in Vienna. Better Car Illumination Effects Other Economies. Small Geared Turbo Units. Telephone Train Dispatching on the Cedar Rapids & Iowa City Railway. Automatically Welded Electric Joints in Brooklyn.

ELECTRIC RAILWAY JOURNAL, Dec. 12, 1914. 14 cols. Ill.

Editorials 1281

Electric Sign in Street Railway Competition 1286

Passenger Traffic to Illinois State Fair 1286

Chicago Elevated Safety Rule Book 1289

Discussion on Government Ownership 1289

Analysis of Stresses in Chicago Elevated Steel Car 1299

Communication—Hearing on I. C. C. Jurisdiction Over Electric Railways 1300

Dinner of Railway Business Association 1300

News of Electric Railways 1311

Financial and Corporate 1314

Traffic and Transportation 1318

Personal Mention 1320

Construction News 1321

Manufactures and Supplies 1324

JAMES H. McGRAW, President. J. T. DE MOTT, Treasurer. H. W. BLAKE, Editor.

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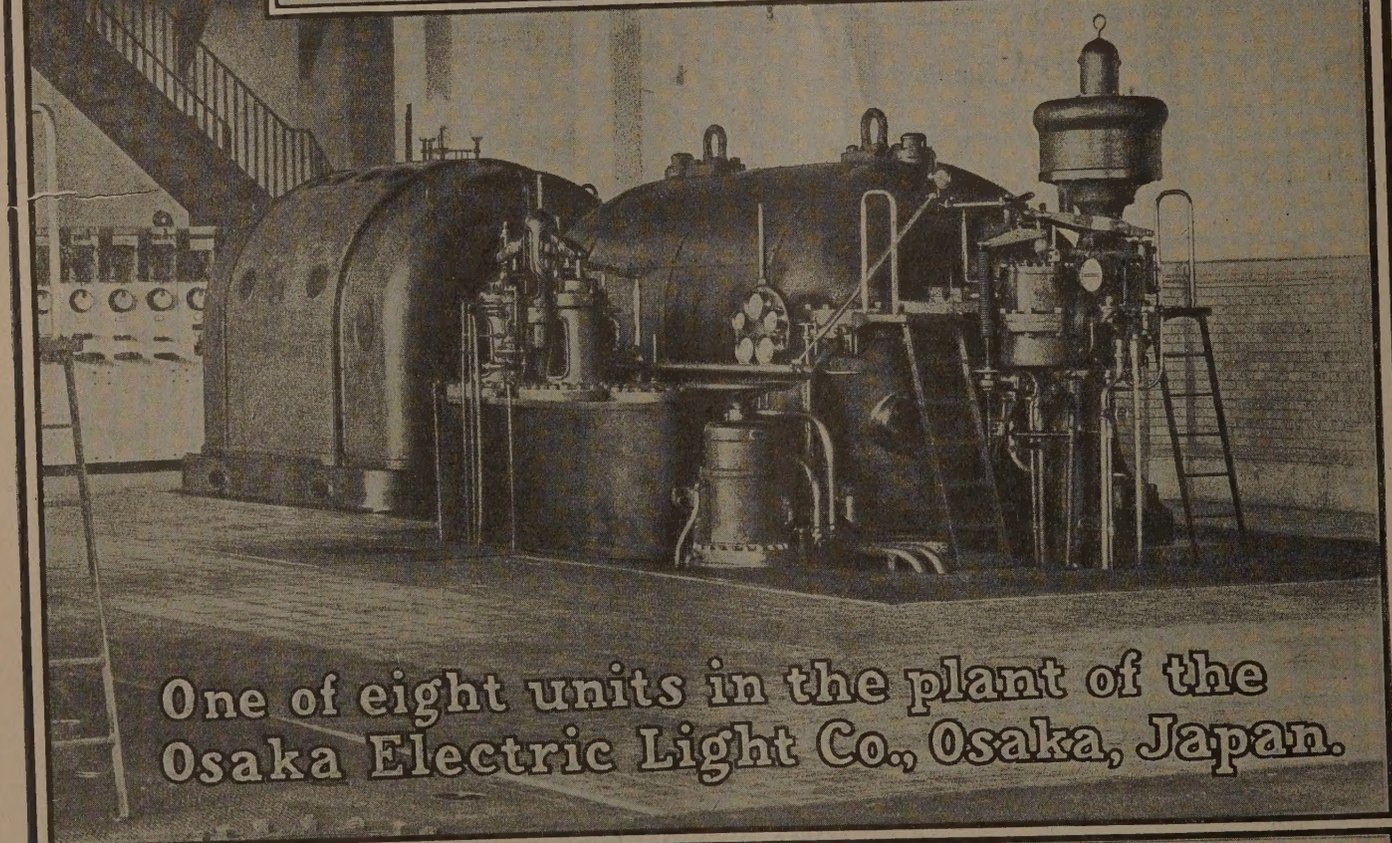

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East Pittsburgh, Pennsylvania.

Electric Railway Journal

Published by the McGraw Publishing Company, Inc.

Consolidation of Street Railway Journal and Electric Railway Review

Vol. XLIV NEW YORK, SATURDAY DECEMBER 12, 1914 No. 24

LET SHOPMEN HELP DESIGN

On several occasions we have called attention to errors in maintenance structure design which might have been avoided had the shop employees been taken into consultation. The bad consequences of leaving everything to the man at the drafting board were noted again lately in a certain New England carshop. The building was laid out for aisle sprinklers, but after these were installed it was discovered that thereafter trolley poles on cars would have to be turned in the open air. Another part of the building was confidently laid out as a paint shop, but when car painting began it was found that a painter could not possibly work in the narrow space which had been left between the painting track and the wall. In general, the provision of satisfactory working clearances for a car shop requires more foresight than may reasonably be expected even from the combined experience of the draftsman, the shop superintendent and general manager. A hint or two from the men closest to the job may avoid many distressing incidents of the nature cited.

THE SKIP-STOP IDEA

One of the reforms which seem a long time in coming is the skip-stop for city service. Railway managers who have studied the plan approve of it, but the inertia of the public in matters of this kind is so great that this reform has been adopted in very few places. Chicago is now reported to be contemplating a trial of the plan. An account of the Denver experience has been published in recent issues. In Los Angeles, where the skip-stop has also been tried, there seems to be some doubt as to the advisability of its continuance. On the other hand, in Cleveland and in Kansas City, where the skip-stop appears to have been originally introduced in the year 1911, it has been continued in operation with every evidence of success. The increase in schedule speed has been reported to be nearly 10 per cent but since half of the cars stop at "odd" streets and the other half at the "even" streets, only about half of the people that collect at a corner board the first car that arrives. Thus the load is distributed more evenly among the cars on the route. There is no doubt that the public would be greatly benefited by the skip-stop because it materially increases the average speed by cutting out the number of stops and yet does not greatly increase the distance which the passengers have to walk to catch a car. In a number of cities the near-side stop has recently been introduced without creating public opposition. Perhaps this change will make the general adoption of the skip-stop more of a possibility.

AUTOMOBILES IN CITY TRAFFIC

Automobiles for private use have now become so common that it is not surprising they should have invaded the passenger transportation field, and several electric railway companies on the Western Coast report considerable competition from automobiles which carry passengers over certain routes for nickel fares. We have no fear that such cars, with the tire cost and other depreciation inseparable from automobile service, can ever be commercial competitors on the same terms with an electric railway system. The report of Mr. McCullom to the Board of Estimate and Apportionment of New York, abstracted in this paper about a year ago, presents ample evidence to this effect. Nevertheless, experience has shown that this fact will not prevent the owners of cars from attempting a service of this kind. In a free country like this, electric railway companies cannot suppress this competition even if they would, but it is only fair to them as large taxpayers and also to the public as a whole, whose patronage is solicited by these buses, that both classes of transportation should be placed under similar regulations in regard to responsibility, and that strict traffice regulations should be enforced. The Merchants & Manufacturers Association of Los Angeles has called the attention of the City Council of that city to the tremendous liability of street accidents from these irresponsible automobiles, and Long Beach, Cal., has imposed a license fee of $25 a year and has required taking out of a $10,000 liability insurance for every such car. Charges of short changing by irresponsible automobile conductors is also made in some of the Western cities. Railway companies can ask no more than a free field and fair play for all, but both they and the public should demand that fair play means an equal degree of responsibility from the operators of both classes of service.

STREET RAILWAY LOADS ON SOILS

A part of the discussion of the way committee's report on track at the convention was devoted to the distribution of railway loads over the ballast and sub-grade. While this subject is of vital importance to steam railroad engineers, owing to the great increase in the weight of locomotives as well as the adoption of higher scheduled speeds of trains, neither of these factors has any bearing on the study of track foundations in paved streets. Moreover, the conditions governing the depth of loose, unconfined ballast are hardly comparable with those surrounding a foundation of concrete or compactly-rolled ballast, such as is required by a modern electric railway. In steam

road, or even interurban road open-track construction, a certain amount of flexibility is required, while track in paved streets must be as rigid as is consistent with economical operation. To obtain rigidity the foundation must be made much heavier than that actually necessary to carry the track loads. In other words, one should determine the average soil-bearing power condition and then select a foundation which will distribute the track loads well within the safe limit. It would be impractical to change the character of foundation with every slight change in the bearing quality of the soil. On the other hand, it is necessary to change the character of foundation when there is a marked change in the soil-bearing power, such as might be found where track is constructed over filled-in areas or where the soil contains excessive moisture. Of course, a drainage system would go far toward improving the latter condition, while rolling the sub-grade will often be all that is necessary to prepare filled-in areas for foundation construction. To sum up, it appears impossible to calculate exactly the distribution of track loads over the foundation and sub-soil. Hence, the selection of the foundation must be based largely on experience, after such mathematical checks as may be required have been made to determine the relation of the load to be carried to the bearing power of the sub-soil.

SNOW REMOVAL

That the removal of snow from city streets should constitute one of the most exasperating of the unsolved engineering problems of long standing is really remarkable when it is considered that the cost of the fuel necessary to melt the snow would be hardly 15 per cent of the expense of removal involved under present methods, the latter consisting, almost without exception, in shoveling the snow into wagons and carting it away. It may be, of course, that snow storms will have to be fought for some time by this primitive scheme, yet in this age of flying machines and wireless telegraphy one must be a true conservative at heart to accept this as a fact, even though the recommendations of the committee on resolutions of the snow removal conference, which were presented before the American Society of Mechanical Engineers last week, approved no new process except the limited use of the sewer system to get the snow off the streets.

The reasons that prevented the general use of sewers, as outlined in the report, could be summed up in the one generality—insufficient sewage flow. In New York, during the last winter, experiments demonstrated that the large trunk sewers with a continuous and fairly rapid flow were not clogged by any snow that might be shoveled into them. The small sewers, however, of about 12-in. diameter required flushing with hydrant water and even then had to be treated with considerable care.

The same idea has been suggested for Philadelphia, where the contractors are supposed to commence the work of plowing or sweeping the snow to the sides of the streets within one hour after a storm begins, the work of carting the piles away being aided by the use of certain sewer manholes for dumps. It is now planned to extend the use of the sewers by having water connections placed inside of the manholes, thus increasing the flow in the sewer and permitting the flushing away of accumulations of snow.

Removal of snow by flushing the streets with cold water naturally seems like carrying coals to Newcastle, but the experience in Scranton has demonstrated that with proper temperature conditions the scheme is capable of reducing the expense of removal to one-half that of cartage. However, when a cold snap follows a snow storm, the presence of great quantities of water on the streets might easily become fraught with considerable danger. This fact, indeed, is implied in the recommendations of the committee. Considerable hope is also held out in regard to the disposal of snow by melting in a furnace. The committee estimates that with a perfect furnace the cost of the coal required would be 3 cents, or with a furnace efficiency of 33 per cent, 9 cents, per cubic yard, against the present cost of carting of about 50 cents. This difference provides a considerable margin from which, of course, the cost of apparatus, labor and maintenance must be deducted. The problem should be an attractive one to the inventor, because there are many objections to carting besides its cost. One is its slowness, another is the congestion caused in the streets by the carts, and a third is the increasing scarcity in most cities of carts suitable for this purpose, owing to the growing tendency to substitute in commercial work for the horse-drawn cart a specialized motor truck not suitable for snow removal.

Surface railways, of course, are not so much interested in the manner of snow removal as in the provisions for operating their lines during and after snow storms. The matters of complaints from the public and of decreased receipts, which are the invariable accompaniments of heavy snow falls, are of serious importance, and at least one road, the New York Railways, is going to great expense to develop a wing sweeper that will clear a passageway beside the track. This has been planned solely to provide space for vehicular traffic which, during snow storms, utilizes the street railway tracks because these provide the only clear space in the street. Obviously the consequent congestion practically prevents the railway company from moving cars. To meet this difficulty wing brooms have also been suggested for Philadelphia and wing plows have been in successful use in Montreal for several years, a layer of snow being intentionally left on the streets in the latter city. It seems unfair to require a railway company, which is responsible only for the clearing of its tracks, to take care of the snow elsewhere on the street. But in many cases, owing to the slowness of the city force, this appears to be necessary for the railways, purely as a means for self-protection, and the development of wing brooms and wing plows seems to constitute peculiarly the railways' share in the problem, just as much as the prompt removal of the snow piles constitutes the share of the municipality.

FEDERAL AND STATE JURISDICTION OVER CITY RAILWAYS

It is not surprising, in view of the recent establishment of commission regulation in this country, that there should be many unsettled questions as to the powers and duties of regulatory commissions. One of the most important of those which remain to be settled is where the power of the federal commission should end and that of the state commissions begin. It would seem that with all of the problems in connection with valuation of steam railroads and the establishment of freight rates that the Interstate Commerce Commission has enough to occupy its time during the next few years, and that to the various state commissions could be assigned the adjudication of all of the intrastate matters which arise in connection with the operation of electric railways. This was the view which a committee of the American Electric Railway Association urged before a sub-committee of the House committee on interstate and foreign commerce last January in a hearing on several bills which would have brought certain equipment of all electric roads which do any interstate business under the jurisdiction of the Interstate Commerce Commission. The protestants at that hearing called attention to the fact that only a small percentage of their business, averaging in most cases less than 1 per cent, was interstate in character.

Now the question has come up again through an order to the Detroit United Railway, which owns about 800 miles of track in Michigan and 2 miles in Ohio, to make reports to the Interstate Commerce Commission on all accidents including, of course, all of those on its large city system in Detroit. If this policy should be adopted as standard, very few urban companies, certainly among those which haul freight and so issue through bills of lading, would be exempt. Moreover, if the jurisdiction of the Interstate Commerce Commission covers this case, it is likely to cover almost any other detail of city operation, and we should then have a centralized government control of our public utilities in addition to state control.

At the last meeting in Washington the railway managers present did not question the good intentions or the ability of the Interstate Commerce Commission in dealing with these matters, as compared with the state commissions. The principal grounds urged were the absence of knowledge of local conditions and the immense amount of work which would be entailed on a central commission and also on the railways themselves in taking up all of these subjects at the federal capital as well as at the state capitals.

If precedent can count for anything, the decision of the Supreme Court in the opinion on the case of the Omaha & Council Bluffs Street Railway vs. the Interstate Commerce Commission (230 U. S. 324) would indicate that that court does not believe that the interstate commerce law covers cases of this kind. At Omaha the situation was somewhat different because the question was one of rates on street railways which happened also to be interstate roads. The conclusion reached then by the court was that the character of the service was the criterion of whether a road is embraced under the interstate commerce law, and certainly the character of the accidents in city service and the means to be taken to avoid them by fenders or otherwise bears little relation to what is generally understood as interstate commerce. We hope that the hearing at Washington next Friday, to which a letter from Arthur W. Brady in our "Communication's" column this week calls attention, will be effective in impressing this fact upon the Interstate Commerce Commission.

HUMANIZING DISCIPLINE

A casual study of a number of bulletins issued to platform men indicates an often unnecessary brusqueness in many of the instructions and little or nothing of a commendatory nature. Of course, the purpose of the merit and demerit system in disciplining trainmen has taken this into account to a certain extent, but attention is here directed to the day-to-day bulletins. Would not the suggestive effect of a meritorious act spread on these bulletins be of much value in disciplining and at the same time offer relief from the constant repetition of "do" and "don't"? Orders must, of course, be issued, but occasional commendation and a mixing of the "sweet" with the "bitter" will help greatly toward better service. The iron hand of discipline might well be covered with the silk glove of consideration. In other words, the human side of disciplining must be recognized.

The frailties of the human mind and body have been thoroughly safeguarded in the operation of trains, so as to make the man as nearly as possible an automaton. All of these precautions have done much to make operation more safe, but they cannot make a machine out of the human body. Hence disciplining in various forms is necessary to make up for this deficiency, and the point we have in mind is that, in disciplinary methods, full cognizance should be taken of the human factor. To illustrate what we mean, take the case of the application of discipline after accidents have occurred. After a serious accident the superintendent's first tendency is to discharge the offenders if they prove to have been guilty of lack of attention or lapse of memory. It is worth while in such cases to go behind the facts and consider some of the contributing causes and thus possibly justify the retention in service of men who will afterward be much more valuable on account of the accident. A momentary mental lapse during a run may result in disaster. Yet we all have mental lapses and the very fact that a man has had no accidents or "near" accidents during his railway career may in itself have made him subject to a false sense of security. As he ages in service his alertness is apt to become sluggish. But this defect may be more than made up, so far as his value of the company is concerned, by better knowledge of local conditions and clearer judgment. This fact should receive consideration when his case is decided. After he gets his "nerve" back he may be a safer man than one with no accident to his credit.

New Cars of Seattle Municipal Railway

Multiple-Unit Control Arranged for a Double Trolley Wire System, Gearless Air Compressors and Air-Operated Fenders Are Among the Unusual Features of These Cars

BY H. J. KENNEDY, ELECTRICAL AND MECHANICAL ENGINEER

In the ELECTRIC RAILWAY JOURNAL, April 26, 1913, and June 20, 1914, some general accounts were given of the municipal railway construction in Seattle. In the present article the new cars built for this railway by the Cincinnati Car Company are described.

The twelve cars are of the double-end, semi-convertible "pay-within" type, having composite-type framing, exterior doors on platforms, and no interior bulkheads. They have arch roofs, are mounted on maximum-traction trucks, and have the following general dimensions:

Length of car over bumpers	44 ft. 5 in.
Length of car over vestibules	43 ft. 1 in.
Length of car over end posts	31 ft. 1 in.
Spacing of transverse seats	2 ft. 5½ in.
Width of car over posts	8 ft. 5 in.
Height of car over trolley boards	11 ft. 2 in.
Distance between truck centers	23 ft. 1 in.
Seating capacity	48
Weight of car empty, approximately	42,000 lb.
Weight empty, per passenger seat	875 lb.

fare boxes and Forged Steel Wheel Company's rolled steel wheels. The interior lighting of the car is effected by 23-watt, Mazda, half-frosted, incandescent lamps, one lamp being placed over each seat and three being located in each vestibule. The latter are connected in series with the destination sign and headlight at the opposite end of the car.

CONTROL SYSTEM AND WIRING

The control system is Westinghouse type HL, electro-pneumatic, with master controllers at each end of the car. Train line receptacles have not been provided, but they can be added at any time when it is desired to arrange for running multiple-unit trains. At the time the cars were ordered, the future conditions of operation of the road were so uncertain that it was felt to be an advantage to have cars which could, if needed, be used in multiple-unit train operation by the addition of the

SEATTLE MUNICIPAL CAR—GENERAL VIEW OF CAR IN OPERATION

The 75-hp motors which are of the Westinghouse 310-C type, were tested at the builders' works by coupling two together, running one as motor and the other as generator, on 125 per cent and 100 per cent loads. In addition, an overspeed test of 1800 r.p.m. and 2600-volt one-minute insulation tests on field and armature were made. One out of each twelve motors had a one-hour A. I. E. E. temperature run, at full load. Commutation was also tested at 200 per cent load. On the one-hour run at 500 volts, a current of 107 amp was applied at 460 r.p.m. to 475 r.p.m., heating the series field (the hottest part) to 79 deg. Cent., the air being 23 deg. Cent.

Among the other items of equipment on the cars are "Utility" ventilators, "Standard" motor trucks, Agasote ceiling, Hale & Kilburn seats, Crouse-Hinds headlights, Earll trolley retrievers, Pantasote curtains, Johnson

train line receptacles. At present, with the exception of the third-rail interurban line to Tacoma, electric cars for passenger service in Seattle rarely haul trailers or run in trains. However, the Seattle, Renton & Southern Railway, which connects with the new line is, in conditions affecting rolling-stock, almost an interurban and it is difficult to foretell what future conditions may be.

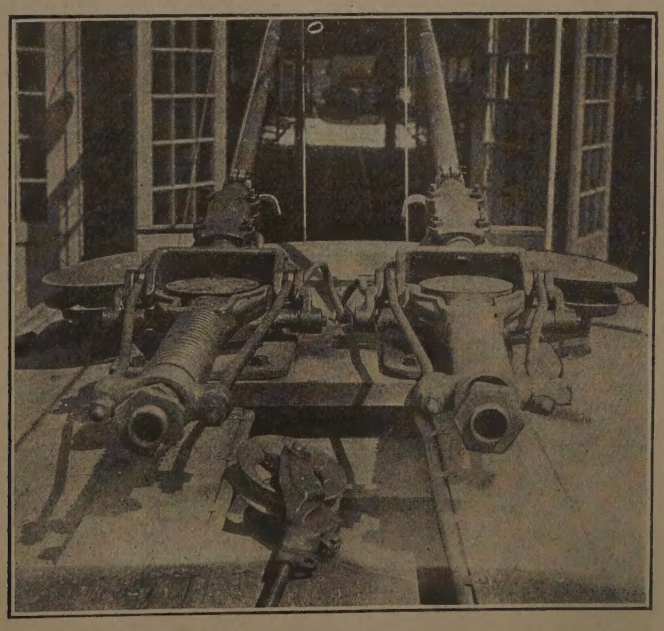
The standard control system has been modified for the double-trolley system which has been installed on the Seattle Municipal Railway, by the addition of an extra line switch in the unit-switch group with corresponding contacts in the master controllers and by an additional control switch in the hood connected on the negative side of the circuit. The overload trip relays on the line switches, positive and negative, of the unit switch groups are set at 325 amp. Instead of one control-

reset switch in the hood, as usual in the unit-switch system, there are two switches, one with fuses on the positive side and one on the negative side of the car circuit, the former being double-throw, the latter single-throw. It may be noted that the apparatus will work if polarity be reversed, the signs mentioned indicating the normal method of operation.

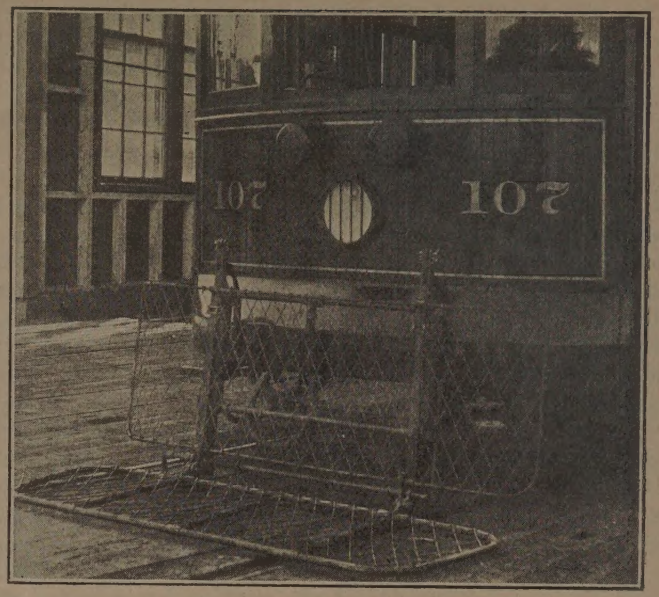
A feature of the wiring peculiar to these cars is the installation under the hood at each end of the car of a single-pole double-throw knife switch encased in a box. The blade of the switch is connected at the hinge to ground to truck, and the terminals to the positive and negative trolleys, respectively. In running from a double-trolley to a single-trolley track, one trolley pole is hooked down and the grounding or transfer switch is thrown to connect the truck with it. It is possible to make the change without stopping the car. For the cars that are in continuous service on the single-trolley Lake Burien Division, however, the negative trolley poles have been entirely removed.

An interesting feature to note in this connection is that, in case of the use of a grounded neutral for the three-wire generators which have been installed in the substation, as soon as a car passes from the double-trolley to the single-trolley line, the position of the ground relative to the outside of circuit moves over by 300 volts, assuming 600 volts total emf. In other words, the potential on the single-trolley wire would be 300 volts higher than that on the positive double-trolley wire, when measured with reference to the ground. Hence there must be an insulated break between the two systems, although, if the car should run past the break with the controller on, the grounding switch being instantly thrown at the same time, there would be no change in the emf impressed on the motors, since the grounding switch raises the negative potential 300 volts simultaneously with the raising of the positive, so that the difference of potential between outside terminals is the same as before. Even if it were possible to perform this experiment, it would not, of course, be made an operating practice because of the consequences in case of failure to perform it successfully. It should be noted that up to date the line has been operated without grounding the direct-current neutral. The three-wire generators are for probable commercial loads.

The trolley bases were designed especially for these cars. The base casting is rectangular, 12 in. x 18 in.,



SEATTLE MUNICIPAL CAR—VIEW SHOWING POSITIVE AND NEGATIVE TROLLEYS AND BASES



SEATTLE MUNICIPAL CAR—VIEW SHOWING FENDER HELD DOWN ON CURVED TRACK BY AIR PRESSURE IN CYLINDERS

the two being mounted side by side on wood trolley boards so as to have a 6-in. air gap between them. The base castings are not themselves live, the trolley poles being insulated from the sockets by a ¼-in. thickness of insulating bushing. The roof cables are connected, not to the bases as is usual but to the poles by flexible pig tails. The poles on diagonally opposite corners of the car are connected to each other, so that the right hand one is positive independent of direction of running, assuming that the overhead system is connected up that way. However, in certain cases of special work, the polarity on the trolley wires is reversed for a short distance. The bases are ball bearing and have one spring.

GEARLESS AIR COMPRESSOR

An interesting feature of the brake equipment is the gearless air compressor, made by the Allis-Chalmers Manufacturing Company. This is remarkable for its compactness and small weight of 425 lb. including suspension cage. It has three cylinders which are approximately horizontal and are connected to the same shaft with a four-pole 600-volt motor, the latter taking 5.7 amp, 3.42 kw, when delivering 18 cu. ft. of free air per minute against 90 lb. pressure, with a temperature rise not exceeding 50 deg. Cent., when operation does not continue over thirty minutes out of an hour. The cylinders are provided with sliding sleeve intake valves of the type used in the Knight automobile engine. These valves are operated by eccentrics on the crank shaft, compelling the opening and closing to be at exactly the proper instant, and insuring large port openings.

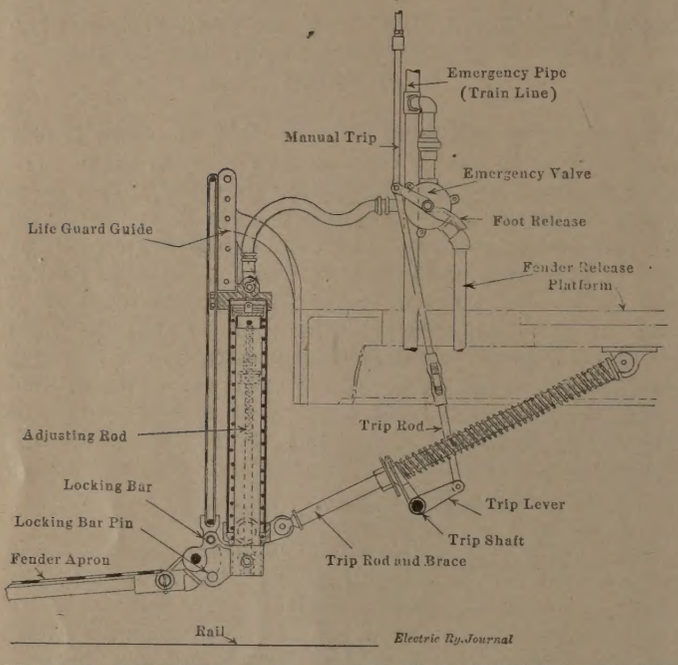
The compressor is 21⅝ in. from the cylinder head to outside of motor casing, and 29⅜ in. long over all measured parallel to shaft. In spite of its speed it operates without any disagreeable vibration. Instead of the noticeable pulsation of the usual geared compressor, the sound takes the form of a hum, due to the speed of rotation and the use of three cylinders instead of two. The motor brushes are readily accessible from the outside of the car by opening the cover located just below the side sill.

PNEUMATIC FENDERS

The fenders on these cars are of the Nelson pneumatically-operated type, generally similar to those used in Portland, Ore., and other places, but of a design improved in several particulars. The fender, both apron

and lifeguard, is hung on slides and kept at its normal height by helical springs contained in two vertical cylinders of 3-in. boiler tube, attached to the bumper beam of the car by brackets. The springs are 2 11/16 in. in outside diameter, 22 in. in free height and have about twenty-three coils of ¼-in. steel. The weight of the moving parts is about 180 lb. Upon admission of air to the cylinders, the springs are compressed and the sliding parts forced down upon the track very quickly and held down with strong pressure so as to scoop up anything lying thereon. The apron is framed of ¾-in. standard wrought-iron pipe and is 78 in. wide over all, and 26 in. deep over all. The frame is filled in with mesh of No. 7 steel wire, 3½-in. diamond mesh. The lifeguard or vertical screen is framed of ¼-in. round iron, is 78 in. wide over all and 27 in. high over all, and is filled in with mesh similar to the apron. The projection of the apron in front of the bumper beam is approximately 33 in. The front edge of the apron is suspended so that it clears the track by about 6 in.

A few inches above the platform floor is placed a



SEATTLE MUNICIPAL CAR—ELEVATION SHOWING FENDER MECHANISM

special rotary fender valve with axis horizontal. On the stem is a lever with a pedal, and with a link connection to the swinging fender, which is hung on pins on the brackets. Impact with some body on the track will therefore throw the fender back and operate the fender valve. The fender valve can also be operated by a bronze handle placed beside the motorman's brake valve and connected by link with the fender valve. In an emergency, when confronted with the danger of running over someone, the motorman uses this handle instead of the air-brake handle, pushing it away from him in practically the same direction as in moving the brake valve handle to emergency. This results not only in dropping the fender on the rails but also in making an emergency application of the air brakes, by admitting air through the fender valve independent of the regular brake valve. Pressure on the pedal releases the air from the fender cylinders and allows the springs again to raise the fender. The air brake is then released by the brake valve in the ordinary way, a check valve preventing the air from running back through the fender valve, although permitting air to be fed through fender valve to brake cylinders, with brake valve in "lap" position.

A fender is permanently attached to the bumper beam at each end of car, the fender not in use being folded up against the dashboard, allowing freedom of motion for the drawbars. There is a double articulation for folding, the first motion merely folding the apron against the lifeguard, the second doubling both of them up and back against the dash. The weight specified for each fender is not in excess of 210 lb., and the pressure on the travel stops of the moving part which drops on the track is specified to be at least 500 lb., but not in excess of 1000 lb., with a pressure of 60 lb. per square inch in the air cylinder.

Electric Sign in Street Railway Competition

As a stranger in the city of Topeka emerges from the union railway station, he is greeted with the shouts of hackmen and cabmen seeking business. If he is alert and is inclined to be thrifty, his eye soon catches sight of a small but concisely worded electric sign on a pole across the street. This sign is shown in the accompanying illustration. Its legend reads "Cars Leave

TOPEKA ELECTRIC SIGN WHICH ATTRACTS THE TRAVELER'S CUSTOM

This Point Every Five Minutes Reaching All Parts of City."

The Topeka Street Railway, operated by the McKinley Syndicate, has chosen electrical advertising as the most efficient method of attracting the attention of the traveling public and thereby bringing the nickels to the company's purse. It is noticeable that in Topeka the bus and cab business is less flourishing than in the neighboring towns and cities.

Passenger Traffic to Illinois State Fair

The Springfield Consolidated Railways Company of Springfield, Ill., reports that 67,000 less passengers were handled in 1914 than in 1913, to and from the Illinois state fair grounds in that city. In 1913 the company handled to the fair grounds a total of 798,000 passengers and in 1914 the number dropped to 731,000. These figures include all transfers from other lines in the city, police passes and all other forms of free transportation allowed by law. The largest day in the state fair week this year was Thursday when 115,000 fares were collected. This is a falling off of 29,000 fares from the largest day in 1913. The company has not sought to ascertain the reason aside from the fact that the state fair of Illinois in 1914 was not as well attended as was the exposition in 1913 and in previous years. The ticket sales at the fair grounds gates showed a decided falling off from the previous year and the receipts of the Springfield Consolidated Railway Company showed a similar decline.

Fair Interest on Investment in Public Utilities

The Author Discusses the Claim that Rates Should Be Based on Depreciated Values and Points Out that the True Criterion Is the Principal Invested—Different Values Also for Rate-Making and Taxation

BY H. J. DAVIES, TREASURER CLEVELAND RAILWAY

John B. Geijsbeek, C.P.A., contributed an article to the April, 1914, number of the *Journal of Accountancy* on "Fair Return to Public Utilities," in which he undertook to show the normal value of a public utility plant to be about 54.55 per cent of its original cost, or half-way between cost and scrap value. Mr. Geijsbeek says that this premise is not new and was described in a report made in September, 1912, to the Public Service Commission of St. Louis by James B. Allison, its chief engineer.

The operating efficiency of a traction plant is probably as high as that of a telephone plant, used by Mr. Geijsbeek for illustration, and higher than 54.55 per cent of its original cost. In a growing city a public utility plant never stands still, never is finished, never stops growing. Demand for additional service requires an increased supply of capital. And so the investment, the amount of "original cost," becomes legitimately larger, annually, monthly, almost daily. And the cost of the additional property is so large a proportion of the total investment that always more than half the property is less than half worn out—has lived less than half its life. The value of such a property, therefore, never falls to an average or "normal" of 54.55 per cent, or half-way from its original cost to its selling price as scrap.

Public utility companies usually own land, and the value of land in a growing community usually appreciates instead of depreciates as the value of all other property does. This enhancement in the value of land tends to keep the average value of the whole property above the half-way point on the road from first cost to final junk pile.

A "normal value line" of 50 per cent or 55 per cent can only apply to or be true of a utility that is neither increasing nor decreasing its plant or its service. Every public service company that is adding to its property to meet the increasing demands and needs of the public has, and must necessarily have, a property worth more than 54.55 per cent of its cost.

Depreciated Value Still in Property

Mr. Geijsbeek says that "if depreciation is charged in addition to repairs and renewals, the public, or the consumer, has paid back to the utility company that amount for immediately existing reduction in the value of the property due to wear and tear not yet made good by renewals. That is either in the pockets of investors or stockholders or is in a reserve fund; if not in the fund, then it is in the reserve account and has been used to purchase additional plant. This, the depreciated plant value, added to earned surplus either on hand or paid to stockholders, will equal the original investment. In such a case a fair return can be only on the depreciated value of the original cash investment, and not on the cost of reproduction. Therefore, if depreciation is allowed in addition to repairs and replacements, the cash investment upon which a fair return is allowed is reduced each year by the amount of depreciation so allowed."

This is not so, unless the amount of the depreciation is returned to the investors as part of their principal. If the amount of all depreciation is returned to the investors as part of their principal, then, when replacements are needed, it will be necessary to invest new capital, which also must be returned with full interest.

If the stockholders have received from earnings, in addition to a fair return of interest upon their investment, a part of the investment itself, and if the contract between the utility and the municipality limits the rate of interest upon investment, it may be proper to reduce the capitalization, or the amount upon which interest shall be paid; but if the principal of the stockholders is kept in the business, whether a depreciation reserve adequate to provide for the disappearing value of the physical property is set up or not, the stockholders should receive interest upon the entire amount and not merely on the depreciated value of the property. Mr. Geijsbeek seems to see this in his "Conclusions as to Deterioration," for he says "Instead of paying this depreciation item to its stockholders in dividends out of surplus, this amount may be held by the company in a reserve account or, sometimes, a reserve fund, in order to keep the investment always at 100 per cent, i.e., present value (or, ultimately, normal value) plus unconsumed depreciation reserve, must always equal original cost." He further says, and truly, that it is difficult to divide the difference between "cost new" and "present value" into renewals and what he says is called depreciation, viz., "that unknown portion of plant value lying between reproduction and normal values that will never be replaced by renewals and which should remain in the reserve accounts or funds to be given to the stockholder at the cessation of operations in order to return to him the 100 per cent he originally invested."

In the meantime, and until the cessation of operations, or at least until he gets his money, or some of it, back, the stockholder should receive interest on the entire amount of his original investment and not merely on the remaining value of the property purchased with his money.

Interest Should Be Paid on Entire Principal

Again, under the heading "Fair Return on Investment," Mr. Geijsbeek writes: "Having decided the subject of depreciation, the question of fair return on the investment comes up. It seems almost impossible to find any two men who agree on what amount the interest considered to be the fair return should be charged. Especially is there a great difference of opinion as to whether the fair return should be calculated on the original cost value or the cost to reproduce the property, or whether it shall be the depreciated value, or the present value, which ultimately will become the normal value."

On the contrary, it is difficult to see how any two men can disagree as to the amount on which interest should be charged. It should be the full amount of honest investment, not the depreciated or present value of the physical property. The toll or rate of fares should be high enough to pay expenses, taxes, a fair interest on original cost, i.e., investment, and to set up a maintenance reserve equal to the difference between cost and present value. If this reserve, which may be

in cash, securities or other physical property (cash and securities are as much property as cars or telephone wires), is adequate, then the value of the company's property will be equal to the investment—as it should be. If, instead of providing for such a reserve, and then keeping it in cash or investing it in additional physical property or in securities, the company uses it to return to its stockholders a part of their principal, calling in some of the outstanding stock or bonds, it may be argued that, the investment having been reduced, the rate thereafter should be based upon so much of the original amount as is still invested. In no case should the rate be based upon present (depreciated) value—unless the stockholders have received, in addition to their interest, the entire difference between cost and present value. If a part of the investment of the stockholders has been returned from earnings and the amount of stock or bonds originally issued has been correspondingly reduced, or if additional property has been purchased from earnings and the difference between investment and present value has been thus lessened, the ratepayers who have contributed to the earnings so used have paid more than should have been charged them; and the ratepayers of the future will be charged less than they ought to pay, because they will pay upon a valuation smaller than the amount of money invested for their benefit.

For illustration, suppose an investment of $1,000,000 in an electric railway property, under an agreement between the company and the municipality that 10 per cent per annum on the investment shall be paid to the stockholders of the company, and suppose that a depreciation of 20 per cent, or $200,000, ensues, the remaining value of the property being $800,000. The company ought then to have, in addition to the $800,000 worth of physical property, a reserve of $200,000 to take care of the 20 per cent depreciation. If, instead of keeping this reserve in cash or investing it in bonds or other property, the company should pay it to the stockholders, in addition to interest at the rate of 10 per cent per annum, then 10 per cent interest on the remaining $800,000, instead of on the original investment of $1,000,000, may be the fair return thereafter, because 20 per cent of that investment has been returned to the investors. In that case $200,000 of the stock or bonds should be called in.

This transaction is perfectly fair and just to the investors and the company; but is it fair to the car-riders of the period in which the depreciation occurred or the reserve was accumulated? Should they have paid for their rides $200,000 in addition to 10 per cent ($100,000) upon the original investment? And should the car-riders of the future have the benefit of that contribution to capital by the car-riders of the earlier period and receive their rides for 10 per cent ($80,000) on only $800,000? If so, then when the property is worn out, or becomes inadequate or obsolete, and is replaced by other property, the cost of the new property must be provided from new capital, on which interest must be paid. And so, instead of paying off a part of capital as physical property depreciates and calling for additional capital when the time for replacement comes, the practice has been to set aside a reserve for maintenance or for depreciation and replacement of physical property and to invest the reserve, or some part of it, in securities or additional physical property. It is not necessary that the reserve be kept in cash. Invested in securities or physical property it should earn a larger return than savings bank interest. This practice is a better security for the investment than alternate payments of principal and demands or calls for new principal.

The car-riders of each month or year should pay a toll or rate of fare sufficient to enable the company to pay its operating expenses, its taxes and a fair rate on its investment, and, in addition, to set up out of the earnings of the month or year a reserve sufficient to take care of the depreciation, as nearly as it can be estimated, in the value of the physical property in the month or the year. The reserve ought not to be less than the depreciation. It ought not greatly to exceed it. Of course, the depreciation is not susceptible of exact ascertainment in advance; but it is possible to make a reasonable estimate, based on the experience of the company and the known experience of other companies in the same business. The reserve should be ample—too large rather than too small. It is easier to reduce the rate of fare to correct an overestimate than to raise the rate to make good an underestimate.

If it were practicable, from the beginning of such an enterprise as an electric railroad, to pay to the stockholders as a partial return of the investment the amount of the increasing difference between the original cost and the present value of their property until the average or "normal" value, or a still lower value, was reached, calling in outstanding stock or bonds as partial return of investment was made, then it would be necessary, whenever renewals or replacements were required, to call on the investors or the public for additional capital to pay for new property to take the place of the obsolete, inadequate or worn-out equipment.

A reserve to provide for repairs as well as for renewals and depreciation would seem to be better than a reserve for depreciation merely, or for depreciation and renewals. It may be called a maintenance reserve. It should be large enough to provide for the difference between cost and the remaining value, at any time, of the physical property. An amount should be set aside in cash each month or each year, or by other periods, equal to the estimated difference between cost and present value in the period, and charged to expense. This reserve should be used for repairs and renewals. The excess above expenditures may be invested.

Different Values for Rate-Making and Taxation

Public utility managers and taxing officials have been embarrassed and confused by attempts to fix one value of physical property for rate-making purposes and another value for purposes of taxation. There should be no confusion. The value for rate-making purposes may be greater than the value for taxing purposes without inconsistency. The value for rate-making purposes should be cost or reproduction value; the value for purposes of taxation should be the value at the time of the tax assessment. If the maintenance reserve is sufficient to make good the difference between cost and present value, the tax value will be the same as the value for rate determination. The property taxed will include the maintenance reserve, whether the reserve is in cash, securities or plant. If the reserve is not as large as the difference between the original cost and the present value of the property, the loss is not the public's but the company's. It indicates that the fare is not high enough to secure the entire investment and a fair return upon it. The public gains, therefore, rather than loses.

The company should not be taxed on the amount of its loss by reason of the insufficiency of the fare to provide for depreciation and reasonable dividends; it is enough that it be taxed on the fair value of its property, including whatever is in its maintenance reserve. It should not be taxed upon its capitalization, unless its physical property and its reserve are equal to its capitalization; and even then the basis of taxation should

be expressed as the value of the property and not as the capitalization. It should not be taxed on the capitalized value of its supposed or actual net earnings, as has been attempted in Ohio. If the rate of fare is inelastic—fixed by contract for a term of years—and the company cannot pay reasonable dividends and provide a sufficient reserve to take care of the difference between cost and present value, it must forego the dividends or a part of them, or, at the end of the contract, lose the difference between cost and the value at that time of its property. But the value of the property, including the value of the reserve, should be the basis of taxation. If the combined value of the existing property and the reserve is equal to the investment, the value for taxation and the value for rate-making will be the same. If the reserve is too small, the loss of the difference between cost and present value, or any part of that difference, will be, as before stated, the investor's loss, and not the public's, in the case of a franchise with a fixed rate of fare. If the reserve is too large under such a contract, the company will gain, but the public will pay only the rate of fare it contracted to pay and will gain in taxes on the excess of value. In the case of a franchise providing for an elastic fare, like the Cleveland franchise, if the company cannot earn its fixed rate of interest and a sufficient reserve at the going rate of fare, the fare may, and ought to be, raised. If the earnings are more than sufficient to pay the stipulated interest and provide a sufficient reserve for maintaining the property at a value equal to its cost or agreed "capital value," then the rate of fare may be reduced. Capital should equal cost—should be neither more nor less than cost. Conversely, cost should equal capital. Present value, plus reserve, should equal cost. But whether capitalization, original cost and present value plus reserve are equal to each other or not, the basis of taxation should be the present value of the property, including the reserve. That value may be more or less than the original cost or the outstanding capital. In either case, it, and it only, should be taxed.

I do not mean that there should be excluded from cost any proper "overhead charge," using that phrase in its widest application, nor the value at the time of its acquisition or subsequently of any land, money or other property donated to the company.

Chicago Elevated Safety Rule Book

As a part of its general safety movement, the Chicago Elevated Railways has issued a book of safety rules. In the preface President Budd states that the purpose of these rules and regulations is to induce habits of caution and cultivate in every employee the thought of being careful of his own safety as well as that of his fellow employees. The rules and cautionary instructions are the result of experience, and putting them in printed form merely places general information in definite and convenient shape for reference by employees.

The book contains about eighty pages of safety rules applying to all departments, and others intended specifically for the transportation department, trainmen, motormen, guardmen, towermen, crossing flagmen and gatemen, and the shop, road and electrical departments. In addition to these rules the book contains a set of first-aid instructions, a list of the first-aid relief stations on the elevated system and the contents and use of the first-aid boxes. In the back of the book several pages are devoted to a telephone directory of the various offices and departments of the road, as well as the telephone numbers and addresses of the company's physicians.

Discussion on Government Ownership

The National Civic Federation Devoted One Session to Discussion of This Subject

One session of the fifteenth annual meeting of the National Civic Federation, held at the Hotel Astor, New York, on Dec. 4 and 5, was devoted to discussion on the subject of "Governmental versus Private Enterprise." Samuel Gompers, president American Federation of Labor, presided at this meeting which was held on the afternoon of Dec. 4. In opening the meeting Mr. Gompers spoke of the committee of the American Federation of Labor which went to Europe to investigate the subject of public ownership and its relations to workers in the endeavor to reach proper conclusions on this much-mooted question. An abstract of this report was published in the issue of this paper for Nov. 21. Mr. Gompers added that the question was not merely academic, but the claims of each side should be critically examined to disclose whether the proposal is practicable or impracticable, wise or unwise.

Discussion by Professor Jenks

The first speaker was Prof. Jeremiah W. Jenks, New York University, who said that the post-office department, so far as anyone can learn, has made no statement of cost accounting in connection with the parcel post, so that one can determine whether it is really carrying cheaper than do the express companies or whether, as seems not improbable, the difference in charges to shippers is made up by the low rates forced upon the railroads against their will or by shifting the burden upon other branches of the postal service or upon the taxpayers. Concerning the question of whether municipal utilities shall be owned and managed by the municipality or by private companies under municipal control, Professor Jenks thought the advocates of this plan should declare what they considered should be guiding principles. Is it to be better service, cheaper service, even free service, or revenue? Whatever the principles may be, the facts should be known. If we are to compare costs, let us have identical systems of cost accounting. If the question is service, let us know whether the people prefer seats or to wait for half an hour before they get a ride, as passengers often have to do in continental cities. If the government is to take the telephone and telegraph, is it to secure better service or cheaper service or for the protection of the people? The state ought to undertake nothing without definite knowledge of the facts to guide it.

Professor Jenks said that in the discussion of the subway situation in New York City which preceded the settlement and the recent contracts, much time was given to the consideration of the matter by public officials. If this had been the time of the officials of a private corporation their salaries and the interest on the capital would be charged as part of the cost of the undertaking. He had never heard it suggested that if there was to be proper cost accounting these costs should be included under the existing subway arrangement, or that the rent for quarters in the City Hall should be so apportioned that part of the charge should be allocated for the time thus spent. All of these considerations were dropped. If private and public operations are to be compared all of these should be included. There is not now sufficient knowledge to permit careful consideration, and this will not be obtainable until systematic cost accounting is introduced.

Discussion by Congressman Lewis

Congressman David J. Lewis spoke in favor of public ownership of the telephone and telegraph service.

"Postalization" of telephone and telegraph service would bring under the control of the government the only outstanding means of communication. Manifestly competition in electrical means of communication is wasteful. On economic grounds that field belongs to monopoly which alone can discharge the functions with proper regard to the price. The speaker pointed out one difference between the express companies, which have been affected by the parcel post, and the telephone and telegraph companies, which would be affected by public ownership. He said that the express companies were really only preferred shippers on the railroad while the telephone and telegraph companies had large investments of their own capital in plants.

Discussion by Mr. Gordon

F. R. G. Gordon, organizer American Federation of Labor, Boston, gave facts and statistics to controvert the argument and statements of Congressman Lewis. He said that practically every telephone and telegraph government system abroad is run with extraordinarily poor service, although paying about one-third of the wages to operatives that are paid by the American Telephone & Telegraph Company and the Western Union Telegraph Company. He said that the so-called wonderful post-office department of the government is the worst managed big business in the country. The post-office department is the recipient of very large favors from other departments of the government because of the failure to introduce cost accounting principles between the various departments. The post-office department does not pay for either use or care of many buildings which it occupies. Mr. Gordon said that the reason why the post-office department is able to claim a success in the parcel post is that it does not pay the railroads what it should pay them for carrying packages. The United States pays less than any other government for transportation of its mail. To take over the telephone and telegraph system would mean that all of the people would be taxed for the benefit of the 5 per cent or 6 per cent who use the service and are best able to pay the bills therefor. He declared that public ownership was cursed by red tape and was characterized by inefficient service, poor wages and large deficits. Governments have always been extravagant and wasteful.

Discussion by Dr. Howe

Dr. Frederick C. Howe, commissioner of immigration of New York, in his argument in favor of public ownership, declared that probably the political and moral gains would be even more important than the financial and social gains. Public ownership removes one of the principal causes of corruption from politics.

Discussion by Mr. Sullivan

J. W. Sullivan, member of Typographical Union, New York, made an address on "Municipalization or a Just Regulation, a Plea for the Facts." Mr. Sullivan was a member of the National Civic Federation commission which studied the subject of municipal ownership abroad in 1907. He also spent last summer in Europe and rendered assistance to the committee of the American Federation of Labor which studies electric railway labor conditions abroad.

He said that comparisons of British and American street railway fares were usually misleading because the British municipal tramways rarely give transfers and that a passenger changing from one line to another paid another fare and was counted as a second passenger. For all distances beyond 5.8 miles the fares in Glasgow are higher than the American 5-cent fare, and Glasgow has only 1 mile of track per 6779 of its population, whereas Philadelphia has 1 mile per 2533, or three times the accommodations. For most British cities, fares beyond 3½ miles are higher than the standard American fare and transfer. The British systems also invariably stand second to American systems in speed, headway, car lighting and in an all-night service. European tramway managers are now abandoning the rule of a seat for every passenger, borrowing from America the practical idea, especially in rush hours, when all the cars possible are run, that the extra people want to travel speedily to their destination standing in the cars rather than to lose time and endanger their health standing on the street corners waiting exposed to the weather. Mr. Sullivan quoted a number of failures of British municipal enterprises, including the municipal Thames River boat system with a loss of $2,500,000, and the Glasgow municipal telephone system with a loss of $275,000, and said that the municipal ferry system of New York was a grand object lesson in municipal ownership.

In discussing the labor situation on municipal roads abroad he said in part: "Strikers against municipalized undertakings are treated as mutineers; the position of the municipal wage-working employee is that of a common soldier directed by a drill sergeant, whose whip is a discharge which closes to the man other municipal employment everywhere. Among the assumed certainties of the early theoretical municipalizers was set down the one that municipal employees would not or could not strike. But bitterly contested tramway strikes, viewed by the authorities as rebellions, have taken place in the last four years in Leeds, Stockport, Blackburn, Cardiff, Oldham, Liverpool and Glasgow. After the Glasgow strike of 1911, 400 of the strikers were victimized and never allowed to return to the service, and after the strike in Leeds in 1913 practically the entire tramway force was similarly victimized. In Glasgow, in the seven years, 1901-1908, 1228 traffic employees were dismissed and 2384 resigned, a number equivalent to a change of the entire traffic force every four years, testimony to an unhappy situation. The Glasgow tramway management, maintaining an open shop, permits no labor union of employees to exist. Were all Britain to imitate the attitude of Glasgow's municipal committee and managers toward labor, no employee would be permitted to be active in politics, no man would be taken on at work without a civil service examination, no trade agreement could be thought of, no liberty of association among the wage-workers could exist, no work at his trade could be found by a man once blacklisted, and no labor movement would be tolerated in the country."

After referring to the report of Messrs. Mahon and Bland on labor conditions abroad, abstracted in a recent issue of this paper, Mr. Sullivan said: "Municipalism breaks down trade union principles; it substitutes for them a one-sided dictation which strips labor of independent action in its own behalf, clothes managers with the powers of an upper caste, backed by the forces of law, and to the extent that it prevails establishes in society a condition destructive of democracy. On that score alone the American wage-worker needs only to have experience with it to reject it. But the American wage-worker, a citizen with the cause of his country at heart, may be depended on to weigh the facts in general relative to municipalism, when he finally obtains access to them, and render fair judgment in the case. Further, whatever is to be said of contests over wages or of the social unrest, it is usually a fact that American employees regard their employers as friends for whose rights they will contend as they would for their own, and if municipalism is to be built up on abuse of the employer and depriving him of any of his just rights, it to-day stands small chance of success."

B. R. T. Safety Work for Employees

Moving Pictures as a Safety Lesson for the Mechanical Department's Men—Safety Programs of Mechanical and Transportation Departments, Including List of Suggestions Adopted by the Former and Employees' Committee—Organization of the Latter

The thorough safety campaign which the Brooklyn Rapid Transit System has carried on for a year or more among the general public, and particularly among the schools, has lately been extended to its employees. As one feature to secure the interest of the men a safety rally was held for the employees of the mechanical department at the East New York headquarters of the B. R. T. Employees' Benefit Association on Saturday night, Dec. 5. The meeting was under the chairmanship of W. G. Gove, superintendent of equipment mechanical department, who introduced as the speakers of the evening H. A. Bullock, chairman of the company's central safety committee, and Dr. Francis D. Patterson, director of the department of sanitation and accident prevention formed jointly by The J. G. Brill Company, Harrison Brothers Paint Company and Electric Storage Battery Company, all of Philadelphia. A concert by the B. R. T. Employees' Band preceded the addresses.

Mr. Gove told what the mechanical department had already done for safe operation. It had occurred to him, however, that a face to face meeting with the men would accomplish even more than correspondence and bulletins. He emphasized the fact that mechanical protection was not everything. Real safety could be achieved only with the co-operation of the individual workers.

Mr. Bullock, after being introduced by Mr. Gove, said that the object of the company was to make the endeavor for safety continuous and permanent. Working rules were just as necessary to maintain the morale of a shop as of an army. He then gave a résumé of the growth of the "safety first" movement and showed particularly how electric railway hazards had been increased by the introduction of heavier, faster cars and the congestion of city tracks. Discussing safety from the psychological standpoint, Mr. Bullock told how custom breeds such indifference to danger that a soldier will risk his life to get a light for his pipe. The same characteristic leads a workman to become careless in doing things that always have an element of danger, such as climbing ladders, serving rip-saws and steam hammers, etc. Co-operative action as well as the physical resistance embodied in rules and devices was necessary to combat this tendency. In conclusion, Mr. Bullock asked every man to appoint himself a safety inspector to aid in the removal of dangerous conditions, and to resolve furthermore that if any casualties did occur to a fellow-worker he would make use of the company's first-aid treatment instead of trying to carry out the cure himself.

Following the showing of the company's well-known safety film, "The Price of Thoughtlessness," the audience was addressed by Dr. Patterson. The speaker first presented some statistics of railway and individual accidents in the United States, and followed this with a splendid collection of slides which illustrated the wrong and right way of doing scores of building, yard and machine tool jobs. As an example of what safety work could do, he said that accidents at the Brill shops had been cut from 260 to thirty a month. One of the most prolific sources of accident had been protruding nails. This evil had been scotched so thoroughly that during the past six months not one nail wound had occurred to a Brill workman. It was a good thing to have employees' safety committees, for a man who had once served on such a committee was likely to retain his interest in the work. Dr. Patterson's pictures and his comments on them were well received.

In taking the floor again, Mr. Gove said that the mechanical department had done much to attain safety, but more remained to be done. He wanted the men to understand that he was just as anxious to have safe and satisfactory working conditions for them as he was to have safe and satisfactory cars. As an individual he could do much for their welfare and he knew that he could rely upon co-operation of the office staff with which he was in daily contact, but his goal would not be attained unless the man behind the tool was also determined to help. Without clean shops, clean floors and clean machines, and without due regard by each man for the welfare of his fellow-employee, the organization would never get anywhere. In analyzing the shop accident reports covering the preceding six months he had been deeply impressed to find that 75 per cent of them could have been avoided had the injured man used ordinary care. In conclusion, Mr. Gove mentioned the probable early formation of employee's safety committees at each shop. He also assured the men that every suggestion for betterment would receive due attention.

The meeting concluded with a display of several moving pictures by Dr. Patterson, one of which told the story of an old-fashioned workman whose ill-timed counsel to remove a safety device on gearing was responsible for a serious injury to his future son-in-law.

Departmental Safety Committee of the Mechanical Department

The departmental safety committee organized for the mechanical department has already submitted a report for the first three months of its existence, July 1 to Sept. 30, 1914, and will hereafter continue to submit similar quarterly reports. The committee is composed of the following officials: superintendent of equipment, chairman; superintendent Fifty-second Street surface shop, vice-chairman; division shop foreman Southern division; foreman Crosstown surface carhouse shop, and the superintendent of electric car equipment. The chairman serves continuously while the other members hold office for one year from June 30, 1914. The plan is to appoint those holding similar positions in the mechanical department as members of the succeeding committees. Local shop committees, if appointed, will report to the departmental committee. Regular meetings are held at 3 p. m. every Monday in the office of the superintendent of equipment. Special meetings are held at the different shops whenever called by the vice-chairman.

The following is an abstract of the first quarterly report which was distributed in an edition of 3500 to employees of the department. The next edition will total 12,000 copies and will be distributed to all employees of the company. The report was produced by the department with a motor-driven American Multigraph.

Safety Report of the Mechanical Department

The first work of the departmental safety committee was to make the following recommendations:

Place mail boxes in all shops for safety suggestions, providing frames to post pictorial matter in reference to safety work; supply supporting beams at maintenance

shops in jacking cars; provide on all air hoists cylinder head with jaw for hanging in place of heads with hook upset inside of head, thereby permitting more ready and easy inspection; take photographs to illustrate accidents that frequently occur and that are due to carelessness; use sheet metal non-slip slings for handling armatures; paint red all safety appliances and devices installed at shops, attached to or placed around machinery.

The following work has already been undertaken:

Installed safeguards around machinery at Thirty-ninth Street elevated shop on Sept. 21 for $397.83; at Southern Division elevated shop on Aug. 13 for $344.35, and at Fifty-second Street surface shop (under way) for about $133; purchased four hydraulic jacks for De-Kalb Avenue shop (under way) for about $460; constructed four hooks for hoisting open cars at the Ninth Avenue shop on July 23 for $188.07; constructed and installed mail boxes for safety suggestions, and frames for pictorial matter, at all shops (under way) for about $112.78.

The accidents during the quarter under report are classified in the accompanying table.

Summary of Accidents

Class	Injuries	52d St. Srf. Shop	Ea. Div. El. Shop	39th St. El. Shop	El. Mtce. Shops	S. C. H. Shops	Totals
A	Cuts	8	28	87	9	20	152
B	Burns	2	3	3	2	7	17
C	Bruises	6	11	44	9	15	85
D	Bones broken	..	..	..	..	1	1
E	Sprains and strains	6	..	5	2	1	14
F	Electric shocks	..	..	1	1	..	2
G	Foot punctures	1	..	5	..	..	6
H	Nails torn off	1	2	1	..	..	4
J	Eye	1	5	3	..	..	9
K	Loss of member	1	..	..	..	..	1
L	Internal	..	1	1	..	..	2
	Totals	26	50	150	23	44	293

Attention is specifically directed to the large number of miscellaneous accidents which consist principally of accidents that occurred to employees while they were engaged in their regular duties and which, in most cases, were the result of carelessness, such as striking hand against projecting nails or sharp corners, dropping material which struck the person handling same or others, jumping from car or truck to floor, etc. The figures cover a total of 2000 employees. The comparatively large number of accidents at the Thirty-ninth Street shops were due to the extraordinary reconstruction of 2411 surface cars for air-brake service as described in the Electric Railway Journal for Oct. 31, 1914.

Surface Transportation Department

Bulletin No. 11, just issued from the office of William Siebert, superintendent of surface lines, outlines the safety work of the surface transportation department. The safety committee of this department consists of the following: superintendent of surface lines, chairman; chief of the time-table department, supervisor of instruction, supervisor of line inspection, superintendent of employment, general inspector and two assistant superintendents. All the assistant superintendents will serve in turn on the committee.

In every depot there has been organized a depot safety committee, consisting of the following: Assistant superintendent in charge of the depot, chairman; day depot master, night depot master, one starter, one inspector, three motormen and three conductors. The starter and the inspector will be designated in rotation, so that all starters and inspectors will serve in turn. On Dec. 7, 1914, the motormen and conductors were elected by all the motormen and conductors at the depot in the following way:

The twenty motormen longest in service at the depot on the regular list and the five motormen longest in service at the depot on the extra list were the nominees in the first election, and each motorman in the depot force voted for three out of the twenty-five nominees. The same practice was carried out for conductors. The men who led in the vote received will serve six months on the depot safety committee, while those who secured the second largest number of votes will serve four months and the third highest men, two months.

At the future elections which will be held every two months, one motorman and one conductor will be chosen from a list of twenty-five motormen and twenty-five conductors as in the first election. In this way membership of the depot safety committee will rotate.

Membership is voluntary. Members who are paid by the hour are allowed compensation at their regular rate for time actually spent in assignments of safety work made by the departmental committee. The names of those elected are posted in the extra room, together with the names of the other members of the committee. The stenographer attached to the assistant superintendent's office serves as secretary of the committee. Regular meetings will be held weekly.

For the safety suggestion box the company has provided two forms as follows: Form A to cover suggestions submitted for consideration by the depot safety committee and departmental safety committee, but not requiring immediate consideration; Form B to cover suggestions relating to safety matters requiring immediate consideration, and submitted to the assistant superintendent, depot master or other official in charge of the depot at the time such suggestions are made.

Safety suggestions submitted on Form A are considered by the depot safety committee and the departmental safety committee. They are written on a special form (not reproduced), showing the name, class of employment of the man who makes the suggestion, and the badge number, all written above a perforated line, while the suggestion itself is written below a perforated line. These suggestions are deposited in the safety suggestion box, from which they are removed each day by the assistant superintendent, who forwards them to the office of the superintendent of surface lines, where the portion of each form above the perforated line is detached and placed in a file. The portion of each blank below the perforated line will be returned to the safety committee of the originating depot, which will approve or disapprove them without knowing the names of the writers. The depot safety committee's report on the suggestions is transmitted to the departmental safety committee, which reviews the report and recommends to the superintendent of surface lines for immediate or ultimate adoption, any suggestions which it approves. As each part of the form has a serial number, the names of the men whose suggestions are adopted can be readily determined by headquarters and due credit given.

No discipline is administered to any employee on account of facts revealed by safety suggestions submitted, and employees are asked to feel entirely free to discuss in these suggestions any conditions which bear upon the problem of safety without regard to the question of reflecting upon the work of any other employee. The same credit is given to employees who make meritorious suggestions on Form B as in the case of suggestions on Form A submitted through the safety suggestion box.

The following outline of topics for safety suggestions has been prepared for the guidance of employees:

A—Reports of conditions which are observed to be the cause of accidents. B—Reports of conditions which in the judgment of the employee submitting them may be the cause of accidents. C—Changes of methods which will tend to prevent accidents occurring or likely to occur as reported under (A) or (B). D—Changes in track construction or equipment which will tend to prevent accidents occurring or likely to occur as reported under (A) or (B). E—Any idea which in the judgment of an employee will promote safety in operation.

The safety bulletin board which carries bulletins, pictures and other data relating to safe operation is under the jurisdiction of the depot safety committee.

Convention of Pennsylvania Association

A Full Report of This Meeting in Harrisburg, Abstracts of the Various Reports and Papers Presented are Published—The Topics Considered Included Questions Relating to Engineering, Accounting, Transportation and Public Relations

The winter meeting of the Pennsylvania Street Railway Association was held in the Board of Trade Building, Harrisburg, on Dec. 8 and 9. The opening session on Tuesday was called to order at 1:45 p. m. by C. L. S. Tingley, vice-president Scranton Railway, who then read his president's address. This was followed by an address by Prof. Emory R. Johnson, member Public Service Commission of Pennsylvania, on the subject of "Electric Railways and the Public." These addresses are abstracted elsewhere in this issue. At the conclusion of Professor Johnson's address, E. H. Davis, manager Williamsport (Pa.) Passenger Railway, moved a vote of thanks, which was duly seconded and carried, and President Tingley assured the commissioner that the officers and members of the association were always ready to co-operate with the commission along the lines indicated. H. M. Stine, secretary-treasurer, then rendered a report for the year, showing a balance of more than $2,200. On motion of T. A. Wright, vice-president and general manager Wilkes-Barre Railway, the report was referred to an auditing committee to be appointed by the chair.

President Tingley at this point remarked that he had been requested by C. Loomis Allen, president American Electric Railway Association, to remind the delegates of the winter conference of the American Association to be held in Washington on Jan. 29. For specific information he called upon E. B. Burritt, secretary-treasurer of the American Association, who said that a very attractive program had been provided for the Washington meeting. The meeting was being held in that city largely on account of the opportunity for added publicity. President Wilson had promised to receive the delegates at the White House, and the meeting topic of "Public Relations" would be ably discussed by T. S. Williams, president Brooklyn Rapid Transit Company, and other notable speakers. Mr. Burritt also urged attendance at San Francisco next autumn. In closing he emphasized the desirability of closer relations between the national and the state associations, in which he was cordially seconded by President Tingley.

W. A. Heindle, superintendent Southern Pennsylvania Traction Company, Chester, Pa., next presented eight problems that had been referred to the "Question Box" and urged a spirited discussion thereon at the next session. President Tingley appointed F. B. Musser, president and general manager Harrisburg (Pa.) Railways; C. H. Bishop, president Valley Railways, Lemoyne, Pa., and Thomas Cooper, Philadelphia representative Westinghouse Electric & Manufacturing Company, as members of the nominating committee to report on the following day. The meeting was then suspended while the stereopticon apparatus was being set up, after which W. R. Stinemetz, in connection with his paper on "The Latest Developments in Street Railway Equipment," presented pictures and charts to illustrate means of cutting operating expenses through saving power and of increasing revenues through doing a freight business. The paper by Mr. Stinemetz is published in abstract form in another column.

RATES AND TARIFFS

The progress report of the committee on preparing and filing rates and tariffs was read by C. B. Fairchild, Jr., executive assistant Philadelphia Rapid Transit Company. Mr. Fairchild said that the Interstate Commerce Commission tariff requirements were extremely voluminous, but that in consultation with the traffic bureau of the Public Service Commission of Pennsylvania the committee had endeavored to boil down the federal requirements for State use. He mentioned the necessity of filing exceptions to the official classification and the overlapping of fare zones as two matters requiring special attention. The tentative draft submitted by the committee for discussion was criticised by W. B. Rockwell, manager Eastern Pennsylvania Railways, Pottsville, Pa., on the ground that freight and express tariffs were classified under one head. In his opinion the two classes may easily be separated by remembering that all express is delivered and called for, which is not true of freight as regards rates. Mr. Rockwell said that he recently rented a car to the express companies at a fixed sum per car-mile. If electric railways took up the question of express rates, they should charge on the basis of the pound-mile, but the pound must be limited as regards its cubic contents.

President Tingley stated that it was not within the province of the committee to discuss the setting of rates, inasmuch as it was appointed to solve rather the vexatious problem of securing non-cumbersome rules for filing rates and tariffs. As regards the distinction between freight and express, he felt that the combination classification best recognized existing inconsistencies in such kinds of traffic on Pennsylvania electric railways and had the support of the Public Service Commission. Mr. Rockwell said that no company should carry freight or express in passenger cars or handle such traffic at all if its business did not warrant special cars for such purposes. However, according to an analysis of the varieties of freight and express service in the State, made by Mr. Fairchild, many small companies secure both increased revenues and better public relations by offering a little express or light freight service, and the joint classification is well suited to all such railways. Mr. Rockwell moved the acceptance of the progress report and the continuation of the committee, which was duly seconded and carried.

With the meeting then open for new business, Secretary Stine read a letter from R. P. Stevens suggesting that the association follow the lead of the American Association and substitute "Electric" for "Street" in its name. President Tingley said that the committee which drafted the constitution had discussed this point but had deemed the change unwise on account of the prestige of the old name. Mr. Davis called attention to the fact that under the act of 1889 most companies in Pennsylvania are incorporated as "street" railways, and Mr. Fairchild quoted the new public service commission law to show further adherence to this practice. Mr. Wright moved that the letter be laid on the table, which was carried.

CLASSIFICATION OF VOLTAGES AND SAFETY RULES

Owing to the inability of Gordon Campbell, president York Railways, to be present on Wednesday, the report of the committee on classification of voltages, of which he is chairman, was moved ahead a day on the program. An abstract appears elsewhere.

J. W. Welsh, electrical engineer Pittsburgh Railways, stated that the proposed Pennsylvania rules for safety had been submitted to the American Institute of Electrical Engineers and had been referred to the code committee of this association. He attended the meetings of the code committee as a representative of the American Electric Railway Association. At two meetings in the last month the committee recommended several changes in the rules, especially with regard to striking out the classification of low potential as up to 300 volts, high potential as 300 volts to 3500 volts and extra-high potential as above 3500 volts. Mr. Welsh criticised the idea running through the code that less than 300 volts were harmless and more than 300 volts destructive, for such a classification was purely arbitrary and injurious to the public, and no reason existed for such voltage classification from the standpoint of safety. The rules were also modified to apply only to cases of new installation. The general requirements of the code were not stringent and would be acceptable to most electric railway companies.

Mr. Fairchild quoted a recent order on his company to provide a guard on the blank polished end of a converter shaft in a substation as showing how vital this question is. Mr. Davis urged every member to read Circular No. 49, for in his opinion the rules suggested will prevent companies from pleading customary reasonable care against accidents and will increase the physical space required for attachments. President Tingley said that at one conference in Philadelphia the State Department of Labor and Industry had admitted that it had not considered street railways in the voltage classification, and this led to the reference of the question to the American Institute of Electrical Engineers. F. R. Phillips, superintendent of equipment Pittsburgh Railways, said that the real sting of the proposed State code lay in the voltage classification and he desired the opinion of the practical operating men of the American Electric Railway Engineering Association on the subject.

Employers' Compensation Act

President Tingley announced that the draft of the employers' compensation act made by a special commission appointed by the Governor was now in print and ready for distribution. The meeting was then adjourned. At 7:30 p. m. an informal dinner was served to the members of the association and guests at the Harrisburg Club.

WEDNESDAY'S SESSION

The last day's session was called to order on Wednesday at 10 a. m. President Tingley stated that he had been asked by Mr. Burritt to announce that a one-hour hearing on the subject of reporting accidents was to be held before the Interstate Commerce Commission in Washington on Dec. 18. The commission is attempting to require the Detroit (Mich.) United Railway to report all accidents in the city of Detroit because it has a spur line running into Ohio. In view of the fact that many urban lines have extensions crossing state borders, the American Electric Railway Association has taken this matter up. Although only one speaker will be allowed at the hearing, a general demonstration is desired, for the entering of appearances will be allowed by the Interstate Commerce Commission.

The report of the committee on a uniform crossing agreement was then presented by its chairman, R. P. Stevens, president Mahoning & Shenango Railway & Light Company, Youngstown, Ohio. In connection with the report Mr. Stevens said that at a conference in Philadelphia the previous day it seemed that a closer feeling was being manifested between electric railways and other utilities in the State. The telephone companies were showing more co-operation, and if the telegraph companies and the Pennsylvania Railroad could be led to see electric railway difficulties, an acceptable and workable crossing agreement could be devised. An abstract of Mr. Stevens' report is published in another column. On motion the report was accepted and the committee was continued.

Heights of Car Steps

In the absence of the chairman, H. J. Crowley, vice-president Scranton Railway, the report of the committee on height of street car steps was read by P. N. Jones, general manager Pittsburgh Railways. This committee was appointed to take up with the Public Service Commission of Pennsylvania the matter of the height of car steps. A meeting was held with representatives of the commission during the last national convention, and a large amount of data from the national body was submitted to the commission. Later the committee conferred with car builders, who furnished considerable construction data covering the limitation of minimum height allowable. This, together with photographs taken underneath a car to show the necessary equipment for its operation and control, has been turned over to the commission, upon which now devolves the task of determining the maximum height in accordance therewith. On motion the report was received and filed with thanks.

On account of the unavoidable absence of H. S. Swift, treasurer West Penn Traction Company, Pittsburgh, Pa., his paper on "The Work of the Accounting Officer of Public Service Corporations" was read by Mr. Fairchild. An abstract of this paper is published elsewhere.

Question Box

In taking over the meeting for the discussion of "Question Box" problems, Mr. Heindle said that fuller information should henceforth be presented with questions so as to cover all essential local conditions. Regarding the first question on what is the best automatic signal system for a medium sized single track interurban line operating at not very high speed, Mr. Heindle said that in times of rigid economy the old hand throw signal of five lights in series would be the most advisable system. With reference to automatic systems, P. T. Riley, Scranton Railways, described the three-year use of Nachod signals on a high speed 10-mile line with a 3 per cent grade, and P. F. Gerhart, electrical engineer Harrisburg Railways, said that on 20 miles of single track with twenty-two blocks the company had fairly good results from Eureka automatic signals. He presented some figures on their performance and maintenance cost. T. A. Wright, Wilkes-Barre Railway, then described the modified Ramsey signal used on part of that line and the Nachod system, which is used on 16 miles. His preference was for the latter system.

R. P. Stevens brought out the point that there is a large personal element in signal operation. After fifteen years' experience with all signals, he had decided that the Nachod system was best for and most satisfactory to his employees. Some trouble had been experienced with the contactor, but on his new Ohio properties there were high speed sections controlled by Nachod signals, and the service was smooth and reliable. The men were trained to use such signals and were in sympathy with them.

W. B. Rockwell was of the opinion that the so-called hand signal should be abolished. He criticised signal manufacturers for saying that their systems would run

themselves but also said that electric railway operators had often failed to give signals fair treatment by not having an inspector to keep them in shape.

Mr. Stevens mentioned an absolutely "fool-proof" hand throw target signal, a few of which are used by the Lehigh Valley Transit Company, Allentown, Pa. One man is unable to put his key in the hole until the preceding man has gone through the block to unlock the box. While not advocating a hand-throw system, Mr. Stevens advised companies having such a system and desiring new equipment to investigate these signals.

On the subject of using in cars a small number of large-capacity lamps with reflectors and selector switch, Mr. Phillips said that recent investigations in Cleveland and Indianapolis at first impression showed the economy of such a practice, but that it was now beginning to be believed that small wattage lamps would give more economical service as well as correct illumination. He advised careful consideration of the subject before large lamps were installed. To determine losses in car circuits from trolley to motor and motor to ground, Mr. Phillips advised the use of a voltmeter and the temperature drop method.

The next query dealt with smoking regulations in closed cars. Mr. Heindles' company permits smoking on the rear platform in Delaware, but prohibits the practice in Pennsylvania. President Tingley said that his company in Dayton, Ohio, had tried ejectment proceedings, but after adverse court decisions efforts to stop smoking were abandoned. Mr. Rockwell favored prohibiting smoking on city lines and short suburban runs of fifteen and twenty minutes, but on long lines felt that the practice should be allowed. Mr. Heindle said that in Baltimore smoking is allowed on the rear seats of semi-convertible cars when the windows are open. Mr. Fairchild stated that the Philadelphia lines had prohibited smoking, mostly on account of its unsanitary features. Passengers were not permitted to carry lighted cigars on the cars. Regarding the loss of short riders as a result of such rulings, Mr. Fairchild believed that Chicago and Buffalo experience showed passengers soon chose to save time by riding rather than to walk and smoke.

The discussion on the advisability of concrete poles, especially in city work, was opened by Mr. Heindle, who said that his company had installed about fifty at $12 apiece, including frames and setting expenses. Such poles were often demanded by the public in select districts, but were not advisable for general city use when chestnut poles could be bought for $3.50 or $4. In reply to a question by President Tingley, Mr. Heindle said that concrete poles might well be used in fine districts, being cheaper than steel poles and yet long-lived.

Another question dealt with the use of a $\frac{5}{8}$-in. wheel flange instead of a $\frac{3}{4}$-in. flange in cases where the deeper flanges wear or become chipped before full life is secured. J. H. Yardley stated that a $\frac{5}{8}$-in. flange is used in Philadelphia, and Mr. Fairchild called attention to the investigations on this subject of the American Electric Railway Engineering Association.

STANDARDIZATION OF ACCOUNTS

At this point Dr. John Price Jackson, Commissioner of Labor and Industry of Pennsylvania, delivered an address, which is abstracted elsewhere. Following this, C. J. Joyce, head of the Bureau of Accounts and Statistics of the State Public Service Commission, spoke a few words in connection with the uniform system of accounts yet to be adopted by the commission for electric railways. He said that not all accountants would agree with some details of the new Interstate Commerce Commission uniform system, but that this was quite workable. Moreover, by law it must be used by the interstate electric railways in Pennsylvania, and the adoption of a different system for intrastate lines would make it inconvenient to prepare intelligible statistics for all railways. Mr. Joyce stated that a recent circular letter suggesting the adoption of the national system had resulted in a few replies, all favorable. The State commission will take no action nor set a hearing until all companies have had sufficient time to study the system. If sufficient criticisms come up, the commission will call a meeting of electric railway accountants to thresh the matter out.

PUBLICITY

An additional query was at this point submitted to the "Question Box" on the subject of how far companies should go in giving out construction and operating costs to the public. Mr. Heindle felt that there was a point beyond which facts and figures were unintelligible to the public mind, both on account of lack of education and biased attitude. Mr. Rockwell thought that the greatest trouble was caused by facts being handled by reporters not acquainted with the technique of the industry.

President Tingley then recited how his company had in the last three years secured municipal grants in limited-franchise States by means of publicity. To make the situation more easily understood financial figures should be reduced to divisions of the nickel. Safety campaigns used by the company have been adopted as reading lessons in the public schools of two cities. In one case a good impression was created by showing the cost of an extension, the selling price of adjacent lots before the extension, operating receipts from the opening of the extension and enhanced sales value of lots as a result of the extension.

CONCLUDING BUSINESS

Owing to the recent severe sleet storm in eastern Pennsylvania, E. C. Spring, Lehigh Valley Transit Company, Allentown, Pa., was unable to be present and give his paper on "Efficiency Through Conservation of Time in Interurban Traffic." The auditing committee, W. S. Bell, assistant secretary and treasurer Wilkes-Barre Railway, and John O'Connell, secretary and treasurer Harrisburg Railways, reported on Mr. Stine's financial statements for the year, which were ordered filed.

President Tingley brought up the appointment of a committee to study auto buses, mentioned in his president's address. On Mr. Musser's motion, the matter was referred to the executive committee to prepare a report for next year and to work in conjunction with the committee of the American Association on the same topic. Mr. Heindle moved a vote of thanks to the Westinghouse, Electric & Manufacturing Company for sending a representative to give a paper.

The report of the nominating committee named the following men for office during the ensuing year: President, C. L. S. Tingley, vice-president Scranton Railway; vice-president, T. A. Wright, vice-president and general manager Wilkes-Barre Railway; secretary, H. M. Stine; executive committee, P. N. Jones, general manager Pittsburgh (Pa.) Railways; T. B. Donnelly, claim agent West Penn Traction Company, Pittsburgh, Pa.; Gordon Campbell, president York (Pa.) Railways, and Thomas Cooper, Philadelphia manager Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa. The secretary was instructed to cast one ballot for the above nominees and the meeting was then adjourned.

PRESIDENTIAL ADDRESS

BY C. L. S. TINGLEY, VICE-PRESIDENT AMERICAN RAILWAYS COMPANY

President Tingley stated that the work of the association has grown steadily in volume and value, the membership now including thirty-eight active members and thirty-six associates. The only resignation during the past year was caused by a merger. The fortnightly bulletin issued from the secretary's office is giving valuable service.

The work in collaboration with the state departments is of particular importance. Conferences have been held with representatives of the Public Service Commission. A conference on the question of agreement upon a general form for filing rates and tariffs was followed by the appointment of a committee, which has held several conferences with George P. Wilson, chief of the bureau of rates and tariffs. Another conference on the height of car steps was held between Dr. F. Herbert Snow, chief engineer, and J. P. Dohoney, investigator of accidents, representing the commission, and a committee of the association. Still another conference on the subject of wire crossings resulted in a joint conference with other utilities interested. The association has also co-operated with the Department of Labor and Industry with respect to reporting industrial accidents and to safety rules and regulations. These State departments have extended courtesy and consideration to the representatives of the Railway Association at all times.

Mr. Tingley quoted the Code of Principles adopted at the Atlantic City convention and recommended its adoption by the association. He called attention to the reflection of the business depression and unrest in electric railway receipts. Referring to the coming biennial session of the State Legislature he directed special attention to the problems of vital interest to electric railways which will come before that body. The Republican platform contains recommendations in regard to a workmen's compensation law, to changes in the laws governing corporation taxation and to amendments to the public service commission law. He anticipates a demand for "municipal home rule," which would produce a return to the conditions existing prior to the passage of the public service commission law. The Railway Association and its members should oppose any tinkering with the present law, which should be given time to work out and develop efficiency.

Mr. Tingley favored co-operation in connection with the workmen's compensation legislation provided that a reasonable and equitable bill can be secured. In the matter of corporate taxation he feared that an effort will be made to increase such taxes. This should be resisted as corporations are already taxed out of proportion to other property in the State.

Among other topics touched upon by Mr. Tingley were the satisfactory financial condition of the association and the increasing importance of the automobile bus, which is becoming a factor in the transportation problem. He recommended the appointment of a committee to study the latter subject. In closing he summed up an important phase of public relations as follows:

"There is one angle of our proposition which everybody seems prone to forget, namely, that these great utilities are, as a matter of fact, owned by the people. Every man who has a deposit in a savings bank is interested in the integrity of the great utilities corporations that serve this country because their bonds are held as investments by those banks. Every man who has a life insurance policy, and every woman and child who will become dependent upon a life insurance policy, is vitally interested in the prosperity of these great corporations. Four years ago all the railroad bonds owned by the New York State savings banks were worth $5,000,000 less than their par value; at the beginning of the present year these bonds were worth $41,000,000 less than their par value; to-day the depreciation is even greater. I believe that the last election indicated that the voter appreciated that there was something wrong. He realizes dimly that radicalism has gone too far, but he is not yet fully informed and the radicals are still wide awake and on the job; and it is up to us to do our part to enlighten the voter and to see that he is not again lulled to sleep by the siren song of the theorist."

LATEST DEVELOPMENTS IN RAILWAY EQUIPMENT

BY W. R. STINEMETZ, WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

Under the above title, Mr. Stinemetz discussed the ways in which the cost of maintaining and operating electric railway motors has been reduced, in spite of the more severe service requirements imposed by present operating conditions. Success in reducing maintenance cost is shown by the decrease from $14.63 per 1000 motor-miles, which was the maintenance cost for the Westinghouse No. 56 motor, to 23.2 cents, which is the cost for the Westinghouse No. 323-A motor. The saving in maintenance cost per year of the latter motor over the Westinghouse No. 12-A, assuming 30,000 car-miles per year, amounts to $267.84. As many roads do not keep accurate records of cost of maintaining old equipment, they do not realize what an important part this plays in their total operating cost. Owing to differences in operating conditions on different roads the figures for one road cannot be compared with those of another.

Modern equipment is not only cheaper in maintenance cost but it is more reliable. As a result the public can be kept satisfied through the elimination of delays on the road due to defective cars and at the same time all cars are available for service at all times. Reliability is particularly important during the rush hours when old equipment is likely to be pressed into service.

Modern equipment requires less power, particularly if the motors are properly geared. The development of the field control motor, reduction in weights, and the use of meters and coasting clocks to encourage proper handling of cars have all contributed to power saving.

Many of the older cars were geared too high. As an example of this Mr. Stinemetz referred to a test made in city service where a change from a gear ratio from 18:66, which was in use, to 15:69, resulted in a saving of 13.8 per cent in power under the same operating conditions. In interurban service high gear ratios have sometimes been made to compensate for voltage drop in the line, whereas redistribution of copper and the use of portable substations, if necessary, would have permitted the making of the required schedules with lower gear ratios.

The use of field control results in power saving, as has been shown from the results published from time to time. This form of control virtually provides an electrical means for changing gear ratio. Power can also be saved by a reduction in weight of equipment. Motors with cast-steel frames have reached the limit in weight reduction as further reduction means higher armature speeds, smaller shafts, thinner bearing shells and fewer commutator bars. All of these result in increased maintenance cost. By the use of pressed-steel frames a reduction in weight of 275 lb. has been secured in 40-hp motors, and at the same time there was

greater uniformity in speed characteristics, due to the forged steel ring which is used. This motor weighs 2050 lb., has an armature speed of 540 r.p.m. at rated load, and is adapted for use with 26-in. wheels.

As an example of the saving in power which can be secured by the use of the proper gear ratio and of two-motor field-control equipment instead of four-motor, non-field-control equipment, with the permissibly lighter cars and higher schedule speeds, Mr. Stinemetz states that a road in Utica, N. Y., secured a power saving of nearly 50 per cent, as is shown by the following table:

	With Non-Field-Control	With Field-Control
Weight of car equipped but unloaded—pounds	51,000	36,800
Motors—horse-power	4—40	2—40
Gear ratio	17:69	15:69
Wheel diameter, inches	35	33
Schedule speed—miles per hour	9.8	10.13
Stops per mile	6.59	5.89
Duration of stops—seconds	10.88	10.43
Kilowatt-hours per car mile	3.588	1.892
Weight of loaded car—tons	28.52	21.0
Watt-hours per ton-mile	125.8	90.1
Reduction in watt-hours per car-mile—per cent		47.2

Power can also be saved by proper handling of cars. The use of instruments, such as watt-hour meters, coasting clocks, etc., together with the awarding of prizes for excellent performance, has resulted in savings from 2.7 per cent to 8.5 per cent.

The use of the newer forms of control also effects power saving. The Westinghouse "PK" control keeps down current peaks by regulating the rate of acceleration and the controller is more easily handled by the motorman than those of the older forms. The "HL" control has also proved very reliable in service.

THE ELECTRIC RAILWAYS AND THE PUBLIC

BY EMORY R. JOHNSON, PH.D., SC.D., PROFESSOR OF TRANSPORTATION AND COMMERCE, UNIVERSITY OF PENNSYLVANIA AND MEMBER OF PUBLIC SERVICE COMMISSION

The former antagonistic relationship between the electric railway companies and the public is fortunately changing for one of mutual understanding. The obligations of the service companies to the public and the duty of the public towards the companies are coming to be clearly recognized and to be defined more and more clearly by municipal ordinances and state legislation. It should be the purpose of the board of directors and officials of the service companies and also of all responsible public officials to place the relations of the companies and the public upon a permanent basis of mutual confidence. It is necessary that the companies and the public understand and trust each other, otherwise the companies will not prosper, the service will be poor and the public will suffer.

Electric railway and other public service companies can secure the confidence of the public, provided the companies adhere to methods of financiering and management that square with approved moral standards, provided the companies keep the public fully and accurately informed regarding the affairs of the corporations that serve the public, and provided the service rendered is adequate and efficient.

Little need be said as to the importance of adherence to approved moral standards in corporation management. From now on, the affairs of public service companies must be matters of public knowledge, and it will be impossible for a company successfully to conceal operations that would not meet with public approval. As a matter of fact, no well-managed public service company can afford to adopt business methods that need concealment. Sound financiering and wise accounting have everything to gain and nothing to lose from publicity in corporation management.

All public service companies need particularly to give the public information in order that those who patronize the company may understand what services the company is endeavoring to render and what is needed in order to perform those services adequately. More specifically stated—it is necessary that electric railway and other public service companies should keep accurate accounts according to uniform methods and that their financial obligations should be so straightforward that the public will be convinced that the companies are not resorting to the speculative methods of financiering which, though prevalent in the past, have now come to be condemned. It is also necessary that the companies should systematically publish information that will help the public to understand and correctly judge the financial and service operations of the companies.

Good service is fundamental and all-important. It is essential to the success of the company and is necessary to secure public approval of what the company does. If the public feels that utility companies are straightforward in their financial management and are rendering good service, it will not be opposed to the maintenance of charges that yield adequate profits. The public demand for good service is stronger than for low fares.

The policy of every utility company should be to study the service demands as fully as possible. Such a policy is to be commended, first of all, because it will give the public greater confidence in the companies; the policy is also wise because it may enable the companies to discover what changes are needed in service. It is human nature to keep on doing things as they have been done, and the longer established methods are adhered to, the harder it becomes to change to new, and possibly, better methods. Every electric railway company should seek constantly to discover how its service methods may be changed for the better. Careful attention to complaints as to service will be helpful to the company as well as gratifying to the public.

Many electric railway companies have been apprehensive because of the increasing degree of public regulation of their finances, services and charges, but I believe there is less apprehension now than there was ten years ago. Regulation of public service companies in increasing measure by states and municipal authorities has come about naturally and logically. It is necessary for each municipality to have a unified transportation service, and, with but few exceptions, there is now but one street railway company in each city. The requisite unified service is performed by a consolidated company.

The welfare of the municipality and of the electric railway company which serves the people of the municipality are linked together. The prosperity and development of the municipality require that the management of the public service company conform to the needs of the community served. Municipal regulation is necessary. Likewise, the larger interests of the people of a state as a whole demand that the state shall, by appropriate regulatory authority, supplement municipal regulation of public utilities. State regulation is necessary, first of all, because the public service company often serves more than one municipal area. The power that regulates must be as extensive as the object regulated. Moreover, state regulation is desirable because experience has clearly shown that in the supervision of accounts, finances, services and charges of public service companies there needs to be an executive body whose jurisdiction is state-wide and whose powers are as comprehensive as the tasks to be accomplished. If the regulation of electric railway and other public service companies were left entirely to municipalities, the regula-

tion would be incomplete and would vary greatly as between different localities. Such a condition would be of disadvantage to the companies and not a benefit to the public.

Public service companies may well welcome, and most of them probably do welcome, intelligent public regulation, because the fundamental purpose of such regulation is to bring about an equitable adjustment of the relations of the companies and the public. Wise public regulation makes for the better management of the companies and for improved service; while it also enables the companies, by securing the confidence of the public, to obtain equitable returns upon the property devoted to the performance of their services.

WORK OF PUBLIC SERVICE ACCOUNTANTS

BY H. S. SWIFT, TREASURER WEST PENN TRACTION COMPANY, PITTSBURGH, PA.

In his address concerning the work of accounting officers of public service corporations, Mr. Swift stated that the public no longer regards electric railways and other public utilities as private enterprises to be conducted for the profit of their owners but rather as quasi-public undertakings whose operations, accounts and records are to a certain extent public property. The old order of things under which utilities operated their properties and kept their books as simply or as elaborately as seemed best to the officials, with little or no outside interference as long as they kept within the law, is past. Then the accounting was for the information of the officers, the directors and, lastly, the stockholders, but now the accounting officer has become responsible to governmental authorities and various regulatory bodies for the honesty and the correctness of his work.

Mr. Swift believed that the requirements for the success of public service accountants are many. They should have a general knowledge of what is going on in the operating department, in order to devise proper accounting methods in connection with new construction or reconstruction work. Moreover, a duty sometimes neglected is the inspection of all such undertakings so that accountants shall be prepared to consider intelligently what proportion of expenditures can properly be charged to capital account, as well as the proper amounts to be provided for cost of unproductive labor, cost of new money, interest during construction and similar items. At the present time complete data are probably not available from which to determine proper depreciation and overhead charges, for previous consideration of these subjects has been academic rather than practical. Such problems can best be solved by the collection of accurate historical data. Mr. Swift emphasized the fact that many items of construction cost tend to disappear when it comes to a valuation of physical property years after, but such items should be entered upon the books in sufficient detail to prevent their being overlooked at a later date.

The accounting officer should give some attention to a systematic analysis of the increased cost of operation. A statement to the general manager that a certain power house or carhouse employed so many more men this year as compared to last is much more impressive than the bare statement that the labor cost was greater. A similar analysis can be made of the amount of supplies used, showing the number of units and the cost. In the case of the purchase of the control over underlying companies, the interests of stockholders must sometimes be safeguarded by a careful consideration of the value of services and expenses incurred by each company on account of other companies associated with it under the same management. All expenses for intercompany services should be justly distributed so that the operating costs of each company may be correct.

Mr. Swift stated that the development of the accounting departments of electric railways has been rapid, although it has received less assistance from without than some other departments. One feature of this development was the perfecting and adopting of a suitable uniform system of accounts. Another indication of growth is found in the increasingly important position held by the accounting officers. This position, however, is not without its additional responsibilities. The accountant should have some knowledge of commercial law, particularly at this date in connection with income taxes and special war taxes. He should also be able to keep a record of contracts and agreements in so far as they affect accounting, and he should so study his company's financial affairs and history as to be in a position to offer plans for new financing or refunding existing obligations. In closing, Mr. Swift spoke of the present opportunity of electric railway accounting officers, but said that they should possess imagination, or that quality of grasping the problems that the future may bring and preparing for them.

CO-OPERATION IN ELECTRIC RAILWAY WORK

BY JOHN PRICE JACKSON, COMMISSIONER OF LABOR AND INDUSTRY, PENNSYLVANIA

Mr. Jackson stated that the four human elements in electric railway work are the patron, who uses the service; the stockholder, who placed his money in the enterprise; the employee, who performs the daily labor, and the government, which acts as the representative of the people. The problem of the present day is to instill the proper confidence in and co-operation among all of these elements. The old days of close personal relation between employer and workmen have gone and in their place exists a period of highly systematized organization dealing more and more with impersonal elements. The modern foreman is told to see that expenses are kept down in order to show a proper balance and as a result often deals in an impersonal and unjust manner with the men under him. On the other hand, the workmen have often looked upon their employer only as an insatiable blood-sucker.

In a similar fashion, the patron of an electric railway, in Mr. Jackson's opinion, sometimes believes that the company is deliberately making him unhappy in order to fill its own coffers, and the public official often assumes that a public utility is guilty without proof or reason. Such a lack of confidence and co-operation is largely caused by irresponsible statements made in the press and public places. In fact, ninety-nine out of every hundred of labor disputes arise from a misunderstanding with the management.

The work of the Bureau of Labor and Industry in devising standard safety rules, however, said Mr. Jackson, has proved that co-operation between some of these elements is possible. In about twelve industries, safety standards have been secured by the unanimous judgment of committees composed of capital, labor and bureau representatives. This marks a tendency toward the age to follow that of electricity—the age devoted to the perfection of the human machine and the proper correlation of co-operation between all of its elements.

In closing, Mr. Jackson offered some data gleaned from his recent European trip, to show that German roads are not so superior to American railways as often stated. The tracks are good, but this is largely a result of lightness of the cars. Many cars have no airbrakes, so that stopping is a long, slow process. The heating arrangements on most cars are of an antiquated type, and there is no vestibule, although the winter is quite

severe. The cars, however, have large platforms at each end, on which the crowding exceeds that on American cars. No safety doors are used, and the passengers, both men and women, board and alight while the car is in motion. A notice to ladies, however, is carried on the rear platform, telling them to take hold with the left hand in alighting—a practice which Mr. Jackson thinks American railways might well adopt.

REPORT ON STANDARD SAFETY RULES FOR ELECTRICAL APPARATUS

This committee was appointed on Nov. 12, in connection with the Second Annual Pennsylvania Industrial Welfare and Efficiency Conference, conducted by the Department of Labor and Industry of the State. The matter of especial interest to the committee was suggested standard safety rules for electrical apparatus, which the department has under consideration for use throughout the State. On Nov. 19 a paper was presented by Dr. Rosa of the federal bureau of standards regarding Circular No. 49 of this bureau. This contained standardized safety rules suggested for use in the electrical industry. The rules now under preparation by the Pennsylvania Department of Labor and Industry are a move toward the single safety standard recommended by the bureau of standards. They will, it is understood, be submitted shortly to those interested for study and suggestions, and in the opinion of the committee there should be careful collaboration with electric railway operators in order to avoid imposing needless limitations or establishing hurtful precedents. The dividing lines in classifying voltages should be drawn at the proper points. It is the general practice of electric railways of Pennsylvania to operate at 550 volts, which in actual practice means 600 volts to 650 volts at the busbar, and if boosters are used to compensate for heavy loads, 600 volts to 750 volts to provide for line loss and thereby apply satisfactory voltage at the ends of long lines. This is essential to good service and these voltages are not ordinarily dangerous. Throughout the rules of the bureau of standards 750 volts is specified in overhead construction, above which special precautions are required. Direct current of the above voltage should not be classed with alternating current used for primary distribution, generally at 2200 volts. The committee feels, in general, that there is merit in the suggestion of the bureau of standards, for one standard for all states, but a careful study of proposed rules by all members is recommended.

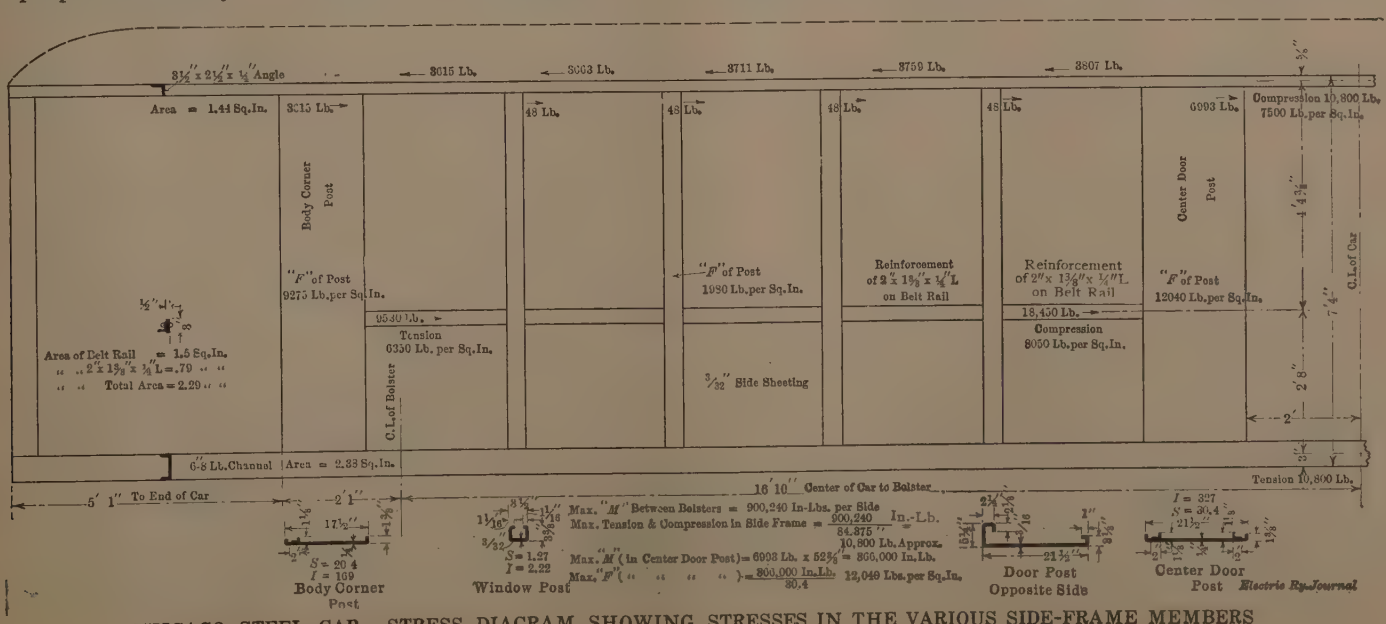
Analysis of Stresses in Chicago Elevated Steel Car

BY H. A. JOHNSON, MASTER MECHANIC CHICAGO ELEVATED LINES

In connection with the methods employed in designing the new pressed steel cars for the Chicago Elevated Railroads, which were described in the ELECTRIC RAILWAY JOURNAL of Dec. 5, 1914, on page 1234, it may be that a detailed description of the stress analysis will be of general interest. As mentioned in the article describing the car, the minimum loads assumed included a standing and seated load of 150 passengers weighing 140 lb. each, or a total of 21,000 lb. To this the dead-load weight of the car body, amounting to 35,600 lb., was added. This weight was distributed 27,860 lb. between bolsters and 7740 lb. outside of the bolsters. In addition to the ordinary loads, the ends of the car were so designed as to support a total load of 28,500 lb. This is approximately the weight of a car body in a partially telescoped position, and the allowance provides for a condition which might occur in a collision.

Each side of the car body was designed as a continuous truss with intermediate supports at the two body bolsters. The entire carload between body bolsters was carried on side trusses while the platform load was distributed over the extended bottom sills, which form cantilevers. The bending moments due to the differently distributed components of the total load were computed and plotted to scale. The resulting diagram showed that the maximum unbalanced bending moment at the center of the car totalled approximately 900,240 in.-lb. on each of the two side trusses. A reproduction of this diagram is shown in one of the accompanying illustrations.

Having determined the general dimensions of the side truss, together with the number of posts required to give standard commercial sizes of window glass, and having calculated the maximum bending moment to be resisted, an analysis was made of the resulting stresses in all members of the side truss. These stresses are also shown in one of the accompanying diagrams, a detailed explanation of which may assist in an understanding of the methods used in the calculations. The side framing of the car, extending from body corner post to body corner post, was treated as a riveted truss. Since this side truss could not be extended effectively beyond the body corner posts of the car, the underframing was designed strong enough to support the loads beyond the

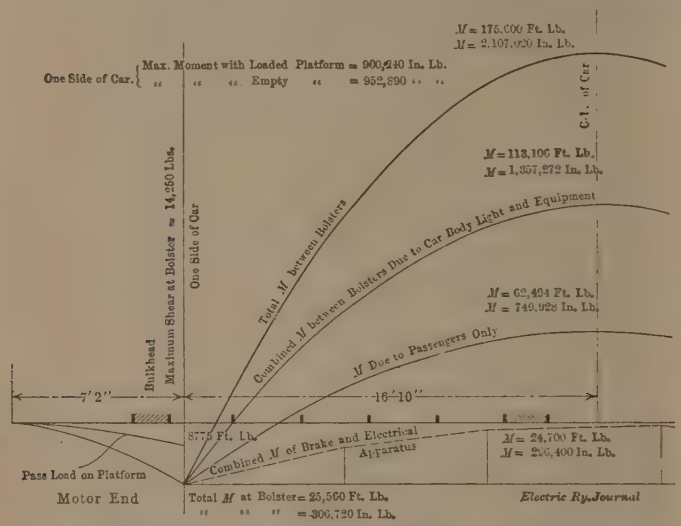

8½" x 2½" x ½" Angle
3015 Lb.
3063 Lb.
3711 Lb.
3759 Lb.
3807 Lb.
Area = 1.44 Sq.In.
3015 Lb.
Body Corner Post
48 Lb.
6993 Lb.
Compression 10,800 Lb.
7500 Lb. per Sq.In.
Center Door Post
"F" of Post
9275 Lb. per Sq.In.
"F" of Post
1980 Lb. per Sq.In.
Reinforcement of 2" x 1⅝" x ½" L on Belt Rail
Reinforcement of 2" x 1⅝" x ½" L on Belt Rail
"F" of Post
12040 Lb. per Sq.In.
Area of Belt Rail = 1.5 Sq.In.
" " 2" x 1⅝" x ½" L = .79 " "
" " Total Area = 2.29 " "
9530 Lb.
Tension 6350 Lb. per Sq.In.
18,450 Lb.
Compression 8050 Lb. per Sq.In.
C.L. of Car
C.L. of Bolster
3/32" Side Sheeting
6"-8 Lb. Channel
Area = 2.33 Sq.In.
Tension 10,800 Lb.
5' 1" To End of Car
2' 1"
16' 10" Center of Car to Bolster
Max. "M" Between Bolsters = 900,240 In-Lbs. per Side
Max. Tension & Compression in Side Frame = 900,240 / 84.375 = 10,800 Lb. Approx.
In.-Lb.
S = 20.4
I = 169
Body Corner Post
S = 1.27
I = 2.22
Window Post
Max. "M" (In Center Door Post) = 6993 Lb. x 52⅝" = 368,000 In.-Lb.
Max. "F" (" " " ") = 900,000 In.-Lb. / 30.4 = 12,049 Lbs. per Sq.In.
Door Post Opposite Side
I = 327
S = 30.4
Center Door Post
Electric Ry. Journal

CHICAGO STEEL CAR—STRESS DIAGRAM SHOWING STRESSES IN THE VARIOUS SIDE-FRAME MEMBERS

bolsters and to contribute a balancing bending moment to the side trusses, as noted on the bending moment diagram.

The maximum unbalanced bending moment of 900,240 in.-lb. in the side truss, which is 84⅜ in. in depth, results in a tension of 10,800 lb. in the bottom chord, or side sill, and an equal compression in the top chord, or deck plate. As there are no effective diagonals in this truss, the compression in the deck plate must be absorbed by the posts rigidly held in a vertical position by the side sheathing and belt rail to which they are riveted. The intermediate posts, together with the panel posts at the vestibules and flanking the center entrance, act as simple beams each rigidly supported at one end and with the total compression in the deck plate, applied to the other end.

In a cantilever beam of length l, the deflection is given by the formula, deflection $= \frac{Wl^3}{3EI}$ where E is the modulus of elasticity of the material and I is the moment of inertia of the section resisting the bending action. As all the side posts are deflected an approximately


M = 175,000 Ft. Lb.
M = 2,107,920 In. Lb.
One Side of Car. Max. Moment with Loaded Platform = 900,240 In. Lb.
" " " Empty " = 952,890 " "
C.L. of Car
M = 113,100 Ft. Lb.
M = 1,357,272 In. Lb.
Total M between Bolsters
Combined M between Bolsters Due to Car Body Light and Equipment
M = 62,404 Ft. Lb.
M = 749,928 In. Lb.
M Due to Passengers Only
Bulkhead
Maximum Shear at Bolster = 14,260 Lbs.
One Side of Car
7'2"
16'-10"
8775 Ft. Lb.
Combined M of Brake and Electrical Apparatus
M = 24,700 Ft. Lb.
M = 296,400 In. Lb.
Pass Load on Platform
Motor End
Total M at Bolster = 25,560 Ft. Lb.
" " " = 306,720 In. Lb.
Electric Ry. Journal

CHICAGO STEEL CAR—BENDING MOMENT DIAGRAM

equal amount by the thrust of the deck plate to which they are riveted, the force each resists is proportional to its moment of inertia. This is true since all the other factors in the formula are constant when the deflection is the same for each post. These forces and the resulting maximum fiber stresses in the posts are noted on the stress diagram.

The compression shown in the belt rail beside the center entrance is determined by multiplying the 6993-lb. thrust absorbed by the panel post by the depth of the truss and then dividing it by the distance between the belt rail and the base of the post. Similarly, the tension shown in the belt rail at the side of the body corner post is obtained by multiplying the outward thrust of 3615 lb. at the deck plate by the depth of the truss and dividing by the distance between the belt rail and the base of the post. With the completion of this analysis the problem was then one of selecting suitable and economical sizes for the side frame members.

As evidence of his confidence in the business future of this country, W. E. Hodges, vice-president in charge of purchases of the Santa Fé Railroad, announced the purchase of 66,000 tons of 90-lb. main track rail for spring delivery. In connection with this $2,000,000 contract he also announced in an interview that his company would spend $3,000,000 a month for the next few months for supplies and equipment.

COMMUNICATION

Hearing on Jurisdiction of I. C. C. Over Urban Railways

Union Traction Company of Indiana
Anderson, Ind., Dec. 9, 1914.

To the Editors:

The Interstate Commerce Commission is insisting, in the case of certain urban electric railway companies having interstate connections of some sort, that accidents on purely urban lines of such companies be reported to it. The claim of the commission to jurisdiction over these companies appears to be opposed to the principles laid down by the Supreme Court of the United States in the Omaha & Council Bluffs case. Whether this particular question is of great practical importance or not, it is important that the general jurisdiction of the commission over purely urban companies and lines be confined to lawful limits.

A hearing before the commission at Washington on the question of the duty of urban companies of the kind mentioned to report such accidents has been arranged for Friday, Dec. 18, at 10:30 a. m. Argument is limited to one hour. James M. Barrett, president Fort Wayne & Northern Indiana Traction Company, has consented to make the presentation.

It is highly desirable that the commission appreciate the fact that electric railways regard the question as one of importance. The feelings of electric railways with regard to the matter will be partly judged by the interest displayed at the hearing.

It is the wish, therefore, of the committee on federal relations of the American Electric Railway Association, at whose instance the hearing has been arranged, that all electric railways interested be represented at the hearing. Representatives from several large urban companies of the Middle West have already signified their intention to attend.

Arthur W. Brady,
President.

Dinner of Railway Business Association

The two speakers at the dinner of the Railway Business Association at the Waldorf-Astoria on Dec. 10 were Fairfax Harrison, president of the Southern Railway, and Warren G. Harding, Senator-elect from Ohio.

Mr. Harrison said: "In the controversy between the owners of railroads and the representatives of the public, the pendulum has now swung to an extreme on the side of irresponsible public power as it had previously swung to an extreme on the side of irresponsible ownership." In discussing commission regulation he said that one of the most dangerous weaknesses of the system is its inability to give prompt decisions. If a change of policy is demanded in the public interest, the power to pass upon the question must be capable of convenient and prompt exercise. The problem now before the country forms an opportunity for the statesman, who must have the power to impress his views upon his fellowmen. The speaker believed that President Wilson is equal to this great achievement.

Mr. Harding said that the railroads should be prosperous not so much to permit general prosperity but because it was a matter of justice. He believes that ninety-nine out of every 100 thinking people believe the railways are entitled to an increase in rates. He said the country needs to-day fewer legislative bills pending and more bills of lading. In conclusion, he urged managers to have a full understanding with the public.

At the business meeting of the Railway Business Association held during the afternoon George A. Post of New York was re-elected president.

American Association News

The Executive Committees of the Engineering Association and the Transportation & Traffic Association Assign Subjects to Various Committees—Hearing on I. C. C. Jurisdiction Over Electric Railways—Meeting of Joint Committee on Block Signals—Milwaukee Company Section Meeting

ENGINEERING ASSOCIATION COMMITTEE SUBJECT ASSIGNMENTS

The executive committee of the Engineering Association approved the following plan of work for the several committees at its last meeting.

The committee on buildings and structures will prepare general specifications and form of contract for railway structures. It will suggest proper provision for expansion and contraction in concrete structures, together with a provision for properly water-proofing and protecting them. This subject is to be considered along broad lines of application either to thin slab construction or to massive monolithic work, having in mind the carrying of reinforcement throughout either type of work. Further consideration will be given to the fire protection rules, especially with regard to the use of soldering or other heating equipment. The design of a standard fireproof substation building of 1000-kw capacity will also be studied.

The committee on electrolysis will continue its study of the general subject.

The committee on equipment will make a study of, and report upon, the need of a revision of the standard specification for heat treated carbon steel axles, shafts and similar parts, adopted in 1912, and will report upon a specification for gears and pinions, including tolerances. The committee will further make a study of difficulties with M. C. B. journal brasses in heavy electric traction service, by conducting such tests as may seem necessary and will collaborate with the M. C. B. Association and the committee on heavy electric traction. Attention will be given to wires and cables for car equipment, with special reference to fire protection. This subject will be considered jointly with the N. F. P. Association, especially as to the use of lighter conduits in car roofs. The specification for air-brake hose will be broadened to include smaller sizes. The committee will submit a design for a limit-of-wear gage for measuring flange thickness of the Association standard wheel. The steel wheel design will also be revised to include smaller diameters.

The committee on heavy electric traction will conduct a further joint study, with the various other railway associations, of the equipment clearance line shown on the third-rail equipment diagram adopted by this association at the 1912 convention, between the point FE and the gage line of the nearest running rail, and the location of the third-rail clearance line between point ET and the gage line of the nearest running rail. A study of the modern electric locomotive will also be made. Further consideration will be given to the definition of third-rail gage, with reference to the question whether it is advisable to have a definition of the term "Gage Line of Third-Rail." The protection of the contact rail, where an exposed third-rail is used in rapid transit operation, will be considered also.

The committee on lightning protection will take up the general subject as applied to car and line equipment.

The committee on power distribution will study the following specifications: for reinforced concrete poles, for sundry line materials, and for 600-volt d.c. overhead trolley construction with respect to lightning arrester location and grounds. A revision of the standard specification for tubular steel poles will also be prepared.

The committee on power generation will report on good practice in regard to smoke abatement from the standpoint of smoke observations, and in regard to appliances and devices used for determining smoke density. It will consider a specification for boiler tubes, including both open-hearth, seamless, hot-drawn steel tubing and charcoal iron tubes, and others for the purchase of fuel and of power station lubricants. The committee will also review the boiler code of the American Society of Mechanical Engineers with special reference to specifications for boiler tubes.

The committee on standards will determine what roads are using Association standards and recommendations, and will draft a style for the make-up of specifications.

The committee on way matters will continue the study of the proper foundation for tracks in paved streets, and of pavement for use in connection with girder and high T-rails. Traffic counts will be obtained from different companies in accordance with forms submitted in the 1914 report. The committee will prepare specifications, with definitions, for sundry track materials such as ties, track spikes, bolts, tie rods, tie plates, etc., with particular reference to physical characteristics, and a standard specification for special work. A revision will be made of the recommended designs of 7-in. and 9-in. joint plates with special reference to sizes of bolt holes and fits, as covered in Section Wm 4a in the *Engineering Manual.*

TRANSPORTATION & TRAFFIC ASSOCIATION COMMITTEE ASSIGNMENTS

The executive committee of this association recently approved the following list of subjects:

The committee on fares and transfers will continue the study of transfer issuing and collection devices; will study, report, and summarize the fare collection methods used with center-entrance cars; will study the problem of fare collection on prepayment cars on multiple fare lines, reporting on the advisability of stationing extra men at congested points and terminals to collect fares and so to increase the rate of loading on prepayment types of cars, and will investigate the subject of through collection versus zone collection on suburban and interurban lines.

The committee on express and freight traffic will make a further study of the organization of a freight department, giving further and more comprehensive details than were contained in the 1914 report; will investigate the matter of uniform class rates; will report on the relative cost of handling different classes of freight and the relative proportion of each class handled; will continue the investigation of laws, franchises and other restrictions relating to this traffic and will investigate the questions of handling express and of weighing and inspection. The committee will also analyze 1914 passenger and freight earnings as compared with those of 1913, with a view to determining whether, as some companies report, freight business is increasing while passenger business has fallen off. If so, such conclusions will be drawn as are pertinent to

the building up of freight and express business by member companies to take the place of passenger revenue lost through the inroads of the automobile.

The committee on passenger traffic will continue the study of the motor bus and the trackless trolley, supplementing the report of the 1914 committee, summarizing the results obtained in European operation and recommending how electric railways can make use of these two modes of travel. Digests of laws and franchises showing specifically where additional restrictions have been imposed by the authorities on these companies will be prepared. The committee will examine into the results of one-man car operation from such standpoints as speed, accidents, equipment, maintenance and other cost, summarizing present practices, and will further study the effects of the increasing use of automobiles on passenger traffic, with particular reference to interurban and suburban roads, giving specific results as determined by studies made by individual companies.

The committee on rules will continue the consideration of markers in the light of the discussion at the 1914 convention; will compile a joint index of similar or identical rules in the two standard codes for the use of companies which desire to issue a joint code; will investigate and report on the flagging rule as instructed by the 1914 convention, and will develop for the approval of the executive committee and for the use of Association members a procedure for the interpretation of rules and train orders. The committee will report as to the state commissions that have approved the standard codes of the Association or have adopted codes of their own, in the latter case making a statement as to the logical points of difference between the adopted codes and the Association standard codes. The number of roads that have adopted the standard codes since the 1914 convention, up to June 1, 1915, will also be reported.

The committee on schedules and time-tables will continue the study of train dispatching in city service, making a summary of results obtained in the various cities in which this practice is in vogue, and the consideration of the problem of developing capable schedule makers. It will recommend methods of making and recording periodical traffic counts, and will make a study of the influence of frequency of stops on schedule speed and the influence of schedule speed on operating cost, possibly developing curves to show results. Other investigations to be made are those of the effect of the use of fully vestibuled cars on schedule speed and other operating factors, including accidents; of near-side stop practice, indicating the increase in this method of operation that has occurred by years for the past three or four years, and of the standard interurban time-table as adopted in 1911, to determine whether changes or modifications should be made.

The standards committee will undertake the formulation of a standard practice and policy for the adoption of standards for the Transportation & Traffic Association, and will issue a Transportation & Traffic syllabus during the present year.

The committee on the training of transportation employees will bring up to date the digest of laws and regulations affecting employment, last printed in the 1912 report. It will investigate the disciplining of new men where this is handled by the instruction department, and will outline a systematic program for improving courtesy on the part of trainmen, to include recommended bulletins and notices to the men as well as a general outline of practice. Another item of the year's work will be an investigation of watch inspection methods.

The committee on uniform definitions will recast and recompile the definitions submitted by the 1914 committee, with such additional definitions as are necessary, these to be submitted to member companies for specific criticism. A co-ordination of the definitions with the standard codes will follow and this is to be submitted to the Transportation & Traffic Association's standards committee in time to have that committee pass upon it before its submission to the next convention.

JOINT COMMITTEE ASSIGNMENTS

The executive committees concerned have approved the following programs of joint committee work:

The joint committee of the Engineering and Transportation & Traffic Associations on block signals for electric railways will prepare a digest of signal laws and rulings to show if any new rulings of state commissions have been made subsequent to the dates of information contained in the 1914 report. A bibliography on block signals installed subsequent to June 1, 1914, will also be compiled. Designs of standard signal apparatus will be prepared, the committee to co-operate with the Railway Signal Association committee on signaling for electric railways in the adoption of standard signal apparatus. The clearance diagram for semaphore signals is to be considered after conference with the committees on power distribution and heavy electric traction, and a revision of the block signal rules for contactor signals is to be considered jointly with the committee on rules of the Transportation & Traffic Association, Rule No. 10 covering this matter having been referred back to the committee. The subject of light signals for interurban railways is to receive further consideration with a view to the adoption of a definite standard for sizes of lenses for light signals operated by continuous track circuits or contactors. The advisability of changing the reading of the standard light aspects in three-position signaling from "Non-Car Counting" or "Car Counting" to "Non-Registering" or "Car Registering" signals, in view of the fact that the new contactor signal rules all read "Car Registering Signals," will also be considered. A study will be made of signal systems on roads that are signaled from end to end, to cover maintenance cost, efficiency of operation and effect on traffic. The remaining subjects listed are: An investigation of the question of a standard definition for signal failure, the general study and summary of highway crossing protection, and the preparation of a report as to the advisability of operating on single-track interurban line blocked by signals alone without dispatching.

The joint committee on engineering accounting will draft a set of standard forms for use with the cost accounting system recommended by the 1914 committee; will revise the subdivision of operating maintenance accounts to meet the new I. C. C. classification, and will develop a proper ledger, looking toward the maintenance of a continuous inventory. Other subjects will presumably be assigned to this committee by the Accountants' Association.

The joint committee of the Engineering and Accountants' Associations on the life of railway physical property will continue its study of the general subject.

The committee on transportation accounting has received the following partial list of assignments: To investigate the cost of handling baggage free to determine whether or not it brings business to the line, and if it does whether the cost of handling this baggage wipes out the profit resulting from the fare received; to investigate the sub-division of power cost among construction, maintenance and operation.

The committee on transportation engineering will study the operation of trains of two cars or more in in-

terurban passenger and freight service to include cost of operation and comparative figures for single-car operation. A second investigation is into the effect of car and equipment design on duration of stops, in both passenger and freight service. Car design is to be studied from a traffic standpoint in all its phases, first standardizing the methods of determining results. The investigation is to include specimen data sheets showing information which should be obtained in order that member companies who desire to follow the recommendations may have full information before them. An investigation of braking distance on interurban cars is to be made with special reference to the location of block signals. In addition current saving devices will be studied and a summary prepared showing the results obtained, together with costs, including maintenance, etc.

STUDY OF A. I. E. E. STANDARDIZATION RULES

The new standardization rules of the American Institute of Electrical Engineers have been brought to the attention of the committees to which parts are of interest, with the recommendation that they be reviewed and considered.

HEARING ON I. C. C. JURISDICTION OVER ELECTRIC RAILWAYS

At the instance of the committee on federal relations of the American Electric Railway Association, of which A. W. Brady, president Union Traction Company of Indiana, is chairman, a hearing on the above subject will be held in Washington at 10:30 a. m. on Friday, Dec. 18. At this time, in the hour allotted by the commission, an argument will be presented by James M. Barrett, president Ft. Wayne & Northern indiana Traction Company, outlining the reasons against the commission order requiring interurban lines to file monthly reports of accidents in urban operation. The act of 1910 requires monthly reporting of accidents on the lines of interstate carriers by railroad. This has been interpreted by the commission, in the case of the Detroit United Railway and others, to cover urban lines operated by such roads which by virtue of their interurban lines come within the commission's jurisdiction. This is held to conflict with the decision of the United States Supreme Court in the Council Bluffs case. Secretary Burritt has sent out a circular letter inviting company members to be represented at the hearing.

MEETING OF JOINT COMMITTEE ON BLOCK SIGNALS FOR ELECTRIC RAILWAYS

A meeting of the joint committee of the Engineering and Transportation & Traffic Associations on the above subject was held at the offices of the Public Service Railway in Newark, N. J., on Dec. 10. The following members were present: Of the Engineering Association, J. M. Waldron, Interborough Rapid Transit Company, chairman; C. H. Morrison, New York, New Haven & Hartford Railroad; John Leisenring, Illinois Traction System; G. N. Brown, New York State Railways; of the Transportation & Traffic Association, J. W. Brown, Public Service Railway, co-chairman; C. D. Emmons, Chicago, South Bend & Northern Indiana Traction Company. There were also present by invitation H. W. Griffin, Union Switch & Signal Company, and H. H. Norris, ELECTRIC RAILWAY JOURNAL.

Mr. Waldron was elected chairman of the meeting and Mr. Norris secretary. A vote of thanks to the ELECTRIC RAILWAY JOURNAL for its practical interest in the work of the committee was unanimously passed.

The committee then considered the assignments made for the coming year's work, printed elsewhere in this issue, and delegated the work to the following subcommittees, in the lists of which the chairman's name is placed first in each case.

Digest of signal laws and rulings, A. E. Roome, Pacific Electric Railway Company.

Bibliography on block signal installations, H. H. Norris.

Design of standard apparatus, J. M. Waldron, C. H. Morrison.

Clearance diagram for semaphore signals, J. Leisenring, G. N. Brown.

Revision of block signal rules for contactor signals, C. D. Emmons, H. A. Nicholl.

Light signals for interurban railways, J. Leisenring, H. A. Nicholl, C. H. Morrison.

On certain changes in phraseology in regard to standard light aspects, J. W. Brown, C. D. Emmons.

Study of costs of maintenance, etc., of signal systems, G. N. Brown, J. W. Brown.

Review of block signal standards and recommendations, C. H. Morrison, J. M. Waldron.

Consideration of A. I. E. E. standardization rules, as they have bearing on signal matters, G. N. Brown, C. H. Morrison.

Preparation of a definition of "signal failure," A. E. Roome.

Study of highway crossing protection, J. Leisenring, H. A. Nicholl, J. W. Brown.

Report on advisability of operating single-track interurban signal-blocked lines without dispatchers, H. A. Nicholl, J. W. Brown, C. D. Emmons, J. Leisenring.

Preparation of a list of items of information needed in connection with block signal contracts; for trolley contact systems, J. M. Waldron; for track circuit systems, G. N. Brown, J. Leisenring, H. W. Griffin, S. N. Day, General Railway Signal Company.

After making the above assignments the committee considered them informally and discussed the general principles involved.

It was then decided to hold sub-committee meetings in New York on Jan. 4, 5 and 6, and in Chicago on Jan. 18. The next and probably the final meeting of the full committee will be held in Chicago on March 16 and 17 at the time of the meeting of the Railway Signal Association.

MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY SECTION

Company section No. 1 has elected the following officers: President, W. W. Cook, superintendent Cold Spring shops; vice-president, V. W. Dentz, engineer; secretary, H. G. Abendroth, valuation committee; treasurer, A. G. Schwenke, auditor railway receipts. E. W. Miller was elected director for a term of three years.

On Dec. 5 Secretary Burritt sent to all company members of the association copies of the war tax act of Congress, officially known as Public Act No. 217. This act affects electric railways in several particulars, principally in requiring a stamp tax to be paid on bonds, debentures and certificates of indebtedness and upon bills of lading. The act became operative on Oct. 23 and remains so to and including Dec. 31.

The merchants and manufacturers of Peoria, Ill., are arranging to establish in that city a traffic bureau which will have supervision over all switching charges and other shipping conditions. The Illinois Traction System has become one of the most important freight lines entering Peoria and it is proposed to include that company under the new arrangement.

Equipment and Its Maintenance

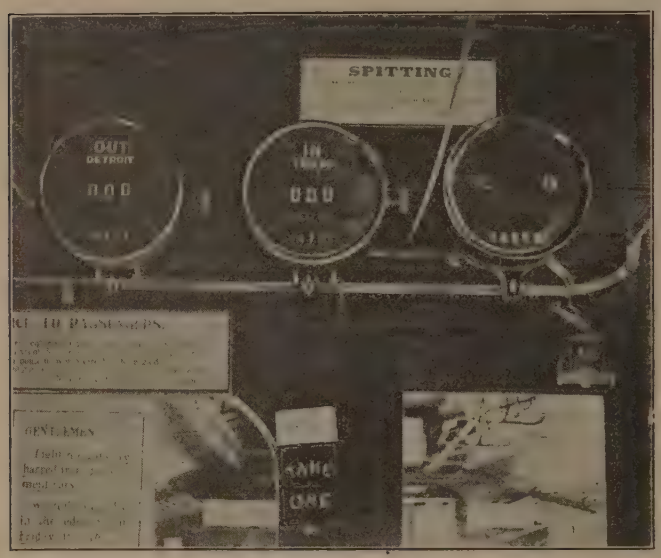
Short Descriptions of Labor, Mechanical and Electrical Practices in Every Department of Electric Railroading

(Contributions from the Men in the Field Are Solicited and Will be Paid for at Special Rates.)

An Ingenious Interline Register System

BY C. L. KELLER, ASSISTANT MASTER MECHANIC DETROIT UNITED RAILWAY

Through cars between Detroit, Mich., and Cleveland, Ohio, operate over the tracks of five different companies, namely, the Detroit United Railway, Detroit, Monroe & Toledo Short Line, Toledo Railway & Light Company, Lake Shore Electric Railway and the Cleveland Railways. A separate account must be kept of the fares collected on each line and, in so doing, the city fares collected in Detroit, Toledo and Cleveland are registered on three separate registers.



INSTALLATION OF REGISTERS FOR INTERLINE OPERATION

On a through car recently put in service by the Detroit United Railway, a simple, effective method of ringing each register was installed. The registers used were two Sterling-Meaker No. 8 and one International. Each register was marked with the name of the particular city in which it was to be used, although the illustration shows only two registers so marked. Instead of using separate cords or rods for operating each, the three registers were arranged to be operated by means of one $\frac{5}{8}$-in. square cold-rolled steel shaft which extends the full length of the car and has a strap pull at each window.

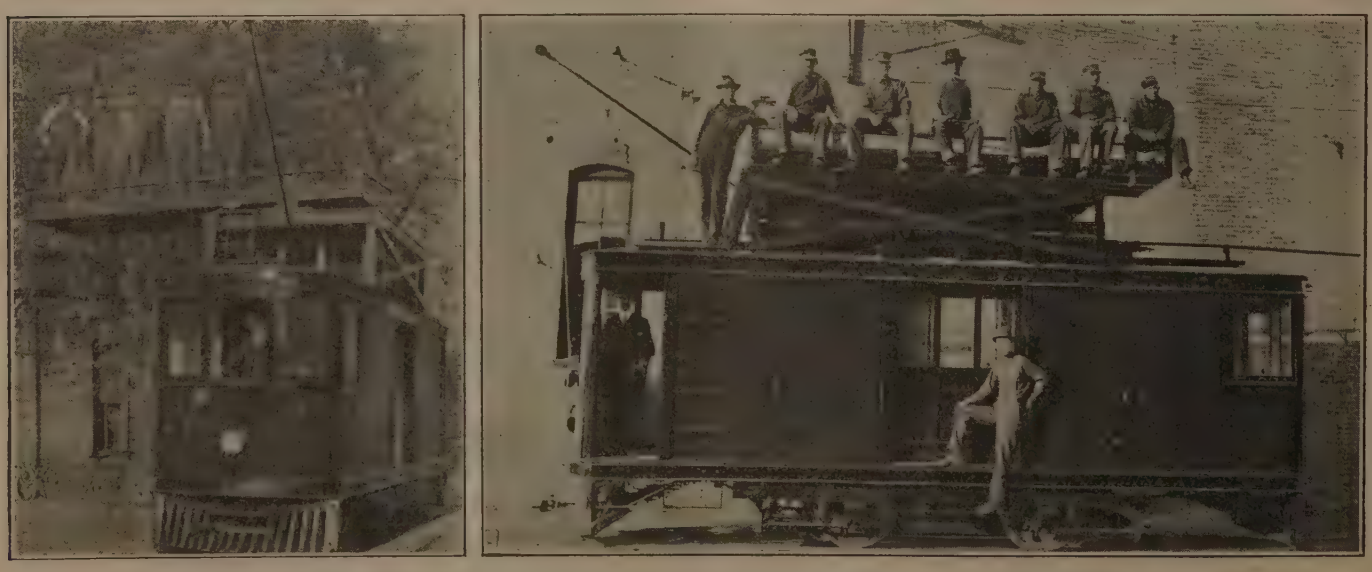
The register racks were placed side by side on the passenger compartment side of the partition between it and the smoking compartment. Just below the racks was placed a $\frac{1}{4}$-in. x $\frac{7}{8}$-in. flat-steel bar. One end of this bar was connected to a clevis fastened to the register rod while the other end was passed through a guide. To the operating lever on each register a $2\frac{1}{2}$-in. steel-wire screwhook was riveted and corresponding screw-eyes were riveted to the steel bar. To use any one of the registers, it is necessary only to unfasten one hook and connect up another. The accompanying half-tone shows the mechanism as installed in a car.

A Home-Made Line Car

BY H. E. WURZBACH, MASTER MECHANIC OGDEN, LOGAN & IDAHO RAILWAY

The accompanying illustrations show a line car designed by the writer and built in the Ogden shops of the Ogden (Utah), Logan & Idaho Railway. In its construction we used an old truck from a single-truck car which had been out of service for some time and two GE-90 motors. The body we built. The principal dimensions of the car follow: Total length, 26 ft.; height from track to top railing, 14 ft. 6 in.; length of turntable platform, 15 ft.; length of turntable platform from center bearing, 12 ft., and width of car, 6 ft. 10 in.

An important feature is the channel iron which completely encircles the body. This channel greatly adds to the strength and rigidity of the car. As the channel flanges are turned outward the beam acts as an anti-climber at the bumper. The car is completely equipped



END AND SIDE VIEW OF LINE CAR MADE BY THE OGDEN, LOGAN & IDAHO RAILWAY

with shelving, lockers and hooks for hanging wire and ropes. A place for long bars or shovels is arranged under the top platform. The speed of this car is about 35 m.p.h. It has been in operation since the middle of October.

Rebabbitting Journal Bearings

BY W. L. FULTON, CHIEF DRAFTSMAN OMAHA & COUNCIL BLUFFS STREET RAILWAY

In the rebabbitting of worn-out journal bearings the Omaha & Council Bluffs Street Railway uses molds of home manufacture. The details of three types of these bearings, namely, armature, motor axle and truck

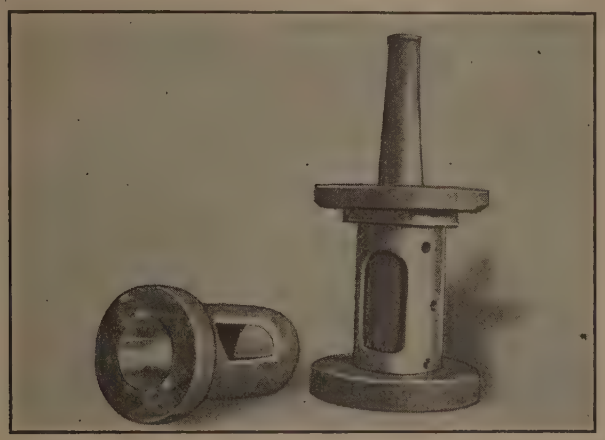
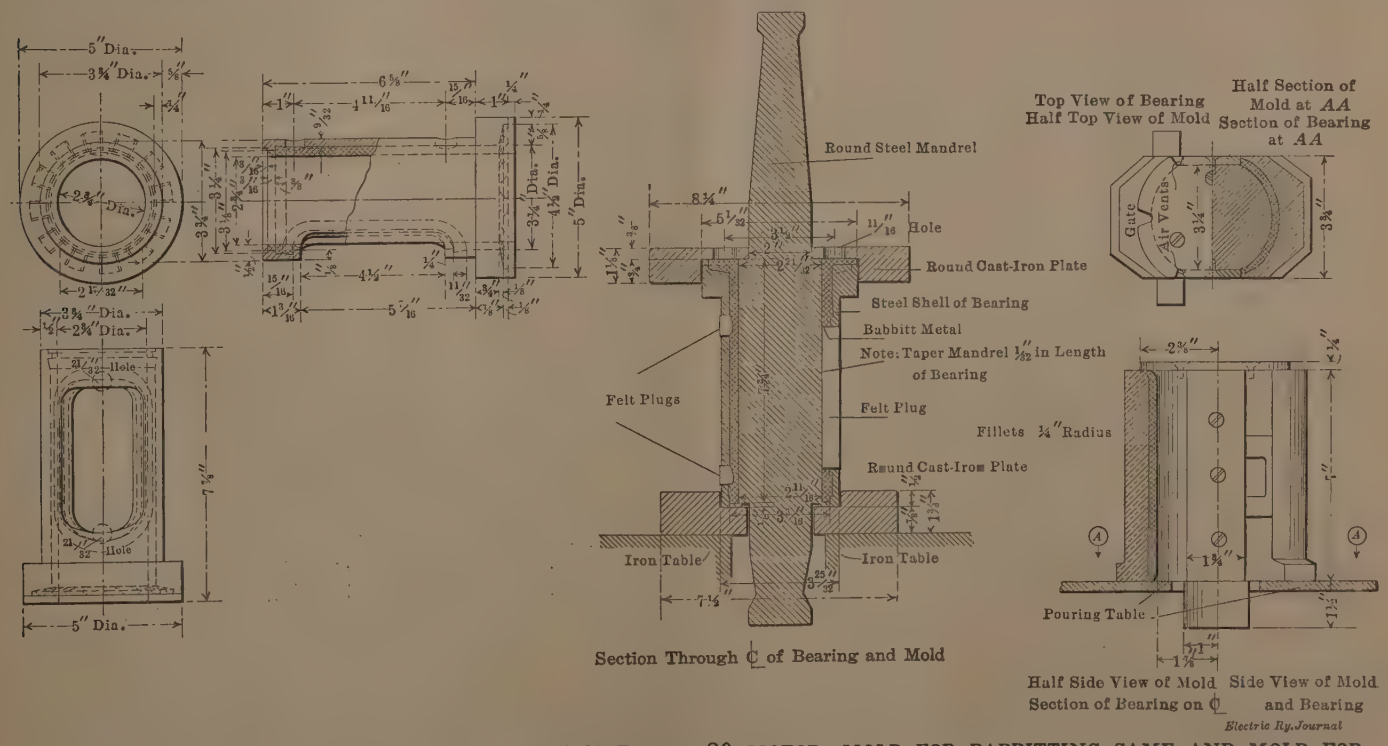


FIG. 3—FINISHED BEARING AND MOLD

journal bearings, together with details of molds for rebabbitting the same, are shown in the accompanying figures.

Armature Bearings.—A bearing typical of this class is the commutator-end armature bearing for the GE-80 motor, the details of which are shown in Fig. 1.



FIGS. 1, 2 AND 7—CAST-IRON ARMATURE BEARING FOR GE-80 MOTOR, MOLD FOR BABBITTING SAME AND MOLD FOR JOURNAL BEARINGS

The mold for babbitting the same is shown in Fig. 2. This mold consists of two cast-iron plates and a round steel mandrel. The shell of the bearing forms the outside of the mold. The two cast-iron plates are machined to provide an even bearing for the mandrel and to give true surfaces to the babbitt. The upper plate contains two 11/16-in. holes for gate and air vent. Each plate also contains a hole through which the end of the mandrel projects. At the lower end of the bearing (Fig. 2) the mandrel has a shoulder which centers the bearing shell. Another shoulder, at the upper end of the bearing, supports the upper plate, giving the proper clearance between it and the end of the bearing shell. The projecting ends of the mandrel, and the taper of 1/32 in. in the length of the bearing, are made to facilitate the driving of the mandrel out of the bearing after the babbitt has cooled.

Oil holes, etc., in the babbitt are made by the use of felt plugs, inserted in holes in the bearing shell and held in place by wires around the shell. A view of the mold and a finished bearing is shown in Fig. 3.

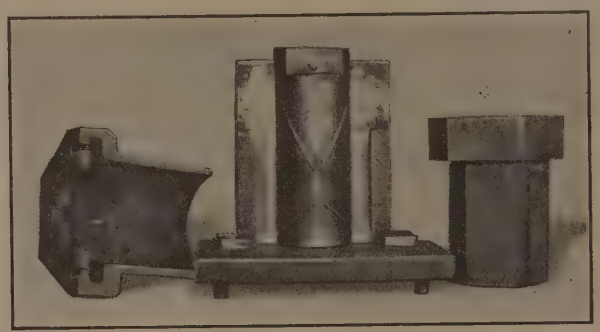


FIG. 6—MOLD FOR MOTOR AXLE BEARINGS WITH CORES IN PLACE AND BACKS REMOVED

After being babbitted, these bearings are machined to an exact fit.

Motor Axle Bearings.—Drawings illustrating this type of bearing and the molds for babbitting it are shown in Figs. 4 and 5, respectively. The mold was designed to cast the two halves of the bearing in one operation and consists of a stand, two cores and two backs. The stand is made of two smooth steel plates connected by cast-iron brackets which also serve to center the backs properly when the mold is being as-

sembled. The cores are placed one on either side of the vertical plate, and are held in place by lugs in the base plate and by a tap bolt extending through the vertical plate. The cores are provided with ridges of the proper size and shape for the purpose of casting oil grooves in the babbitt.

The bearing shells are placed over the cores and the backs are then put in place, covering the shells. The shells and backs fit snugly, centering the shells properly when the backs have been put in place between the brackets of the stand. Each back is provided with a gate and air vent. A ¾-in. threaded hole is also made in each back to admit the crank used for forcing apart the mold and bearing after the babbitt has hardened. Oil holes, etc., are cast by the use of felt plugs of the proper shape and thickness placed in the bearing shell while the mold is being assembled. In Fig. 6 the mold is shown with the cores in place and the backs removed. Axle bearings are not machined after being babbitted.

Truck Journal Bearings.—The molds for babbitting truck journal bearings consist merely of mandrels, each one being shaped to fit one particular type of bearing. These mandrels are usually in the shape of cylinders with lugs or shoulders built out to meet the edges of the bearing shell and of a height to give the proper space between the mandrel and shell. Each mandrel is made to take two bearings at once, one on either side, a clamp being used to hold them in place while babbitt is being poured. Fig. 7, showing the details of the mold for the journal bearings of a Brill 39-E truck, illustrates this type of mold.

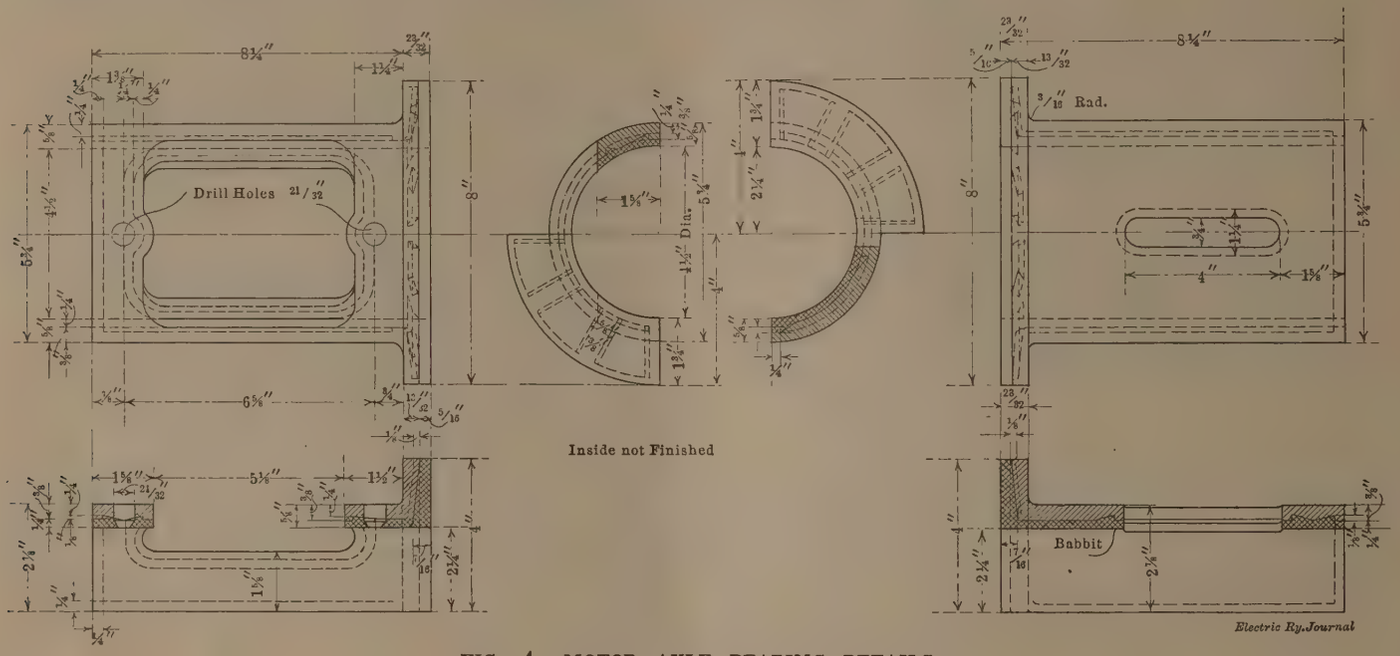


FIG. 4—MOTOR AXLE BEARING DETAILS

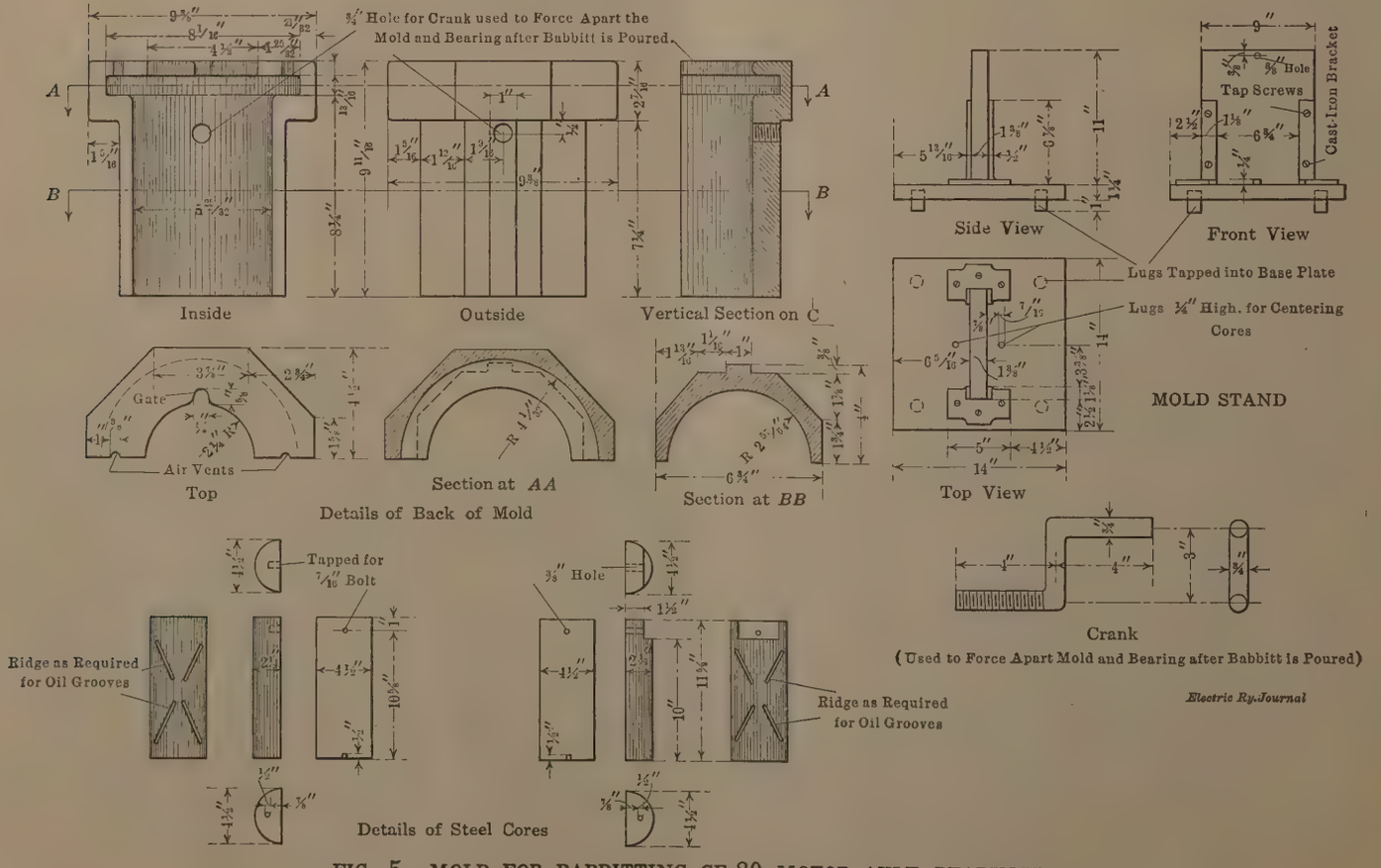


FIG. 5—MOLD FOR BABBITTING GE-80 MOTOR AXLE BEARINGS

Equipment Defects—Control Apparatus and Connections—V

BY C. W. SQUIER, E.E.

Controllers for Electric Braking—Certain manually-operated controllers for railway equipments are arranged so that the motors may be used to stop the car as well as to propel it. This is accomplished by connecting the motors as series generators and using the current generated to operate magnetic brakeshoes, or by closing their circuit through a rheostat make use of them for dynamic or rheostatic braking.

It is an inherent characteristic of series motors that when they are connected to the line to work in a forward direction, with the same connections between armatures and fields and the working voltage removed they will work as generators if the armatures are caused to rotate in a direction opposite to that required for the forward movement of the car; or if the connections between the armatures and fields are reversed they will work as generators in the direction in which they car is moving.

Magnetic Braking.—When magnetic brakes are used the voltage generated by the motors is utilized to energize an electric track, wheel or axle brake. All the connections necessary for utilizing this current to actuate the magnetic brakes are made by the controller. Such controllers are provided with what is termed braking notches which are usually located so that a movement of the main or "power" handle in a direction opposite

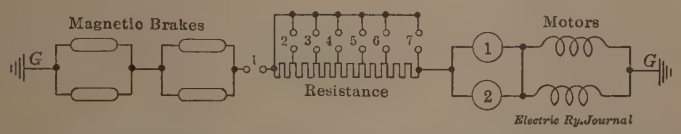


FIG. 14—CONNECTIONS FOR OPERATING MAGNETIC BRAKES

from that necessary to propel the car will bring the fingers into contact with the braking segments and make the necessary connections. By using the same handle continually both for "power" and "brake" the motorman acquires promptness and ease of manipulation. This is a most valuable feature because when emergencies do arise the motorman is never called upon to carry out consciously, yet with extreme promptness, an operation which is not in his regular practice. The simple action of moving the single controller handle in one direction for "power" and in the opposite direction for "brake" reduces to a minimum the "human element" which is so frequently responsible for accidents.

Fig. 14 shows the connections that are necessary to operate magnetic brakes. The motors and the coils of the brake magnets on opposite sides of the car are connected in parallel, and the regulating resistance is placed in series with both. Contacts 2, 3, 4, 5, 6 and 7 are provided for cutting out this resistance so that the amount of current produced by the motors may be varied as required. To apply the electric brakes it is necessary to move the controller handle to the brake notch which agrees with the speed at the moment, and then to move it again notch by notch as the car slows down so as to cut out resistance because the emf generated decreases as the speed of the car falls off. The brake magnets on opposite sides of the car are connected in parallel, as stated, so that the braking force will be the same on both sides.

Magnetic brakes are now seldom used in this country due to the difficulty of securing efficient track braking with the bad track conditions that are encountered on so many roads. In England and on the Continent the track magnets are adjusted so that they are about ¼ in. clear from the rail. It can be readily understood that it would be almost impossible on most American railways to operate with this scant clearance. This trouble could be overcome to a degree by using a less efficient brake magnet. I understand that there has now been developed a magnet which in ordinary service will operate with an adjustment of ¾ in. above the running rail. But even this clearance is much less than we expect for other truck parts.

Dynamic or Rheostatic Braking.—Any controller which is provided with the points necessary for magnetic braking can be used for dynamic or rheostatic braking without any change in the controller itself. No brakeshoes are used with this form of braking. The terminals of the motors are connected to the regulating resistance, and as the current flows there is produced in the motors a back torque (counter emf) which causes the armatures to hold back against their driving force. The greater the torque the quicker will be the stop. Since the armature speed is decreasing the torque will decrease in proportion unless the resistance in the external circuit is decreased as the speed falls off. Therefore, in order that the armatures may exert a uniform back torque while the car slows down, it is necessary that the controller handle be moved from point to point so as to cut out the resistance. As the motors generate current only while the car is in motion, the car will not remain stationary if stopped on a grade unless it is held by some other form of brake. Rheostatic braking uses the back torque alone for making stops. However, where some form of electromagnetic brake is used, the car is not only retarded by the work thrown on the motors, but the current generated is usefully employed in actuating the brakes on the trucks or wheels.

Snow Removal in Montreal

In Montreal the problem of snow removal is a very severe one and the methods used in meeting it have been thoroughly perfected by A. Gaboury, superintendent Montreal Tramway Company. The apparatus consists of the usual sweepers, and, in addition, there are salt cars (which are the equivalent of sand cars) and level-

MONTREAL SNOW FIGHTING—FREIGHT CAR TRANSFORMED INTO A LEVELER FOR CLEARING SPACE BESIDES TRACKS

ers which are regular motor freight cars fitted up with sheet-iron wings that swing out-board. The latter are for the purpose of pushing the snow into piles along the curbs after it has been thrown aside by the sweepers, thus providing a large clear space beside the track for vehicular traffic. The piles of snow are carted away from the city in sleighs furnished by the city, the cost of removal being borne in part by the company.

The use of salt has been found to be an absolute necessity during sleet storms or extreme cold weather,

and salt cars consisting of old single-truck equipments have been fitted up with longitudinal boxes for holding coarse salt, the material being dropped on the switches through tubes opening from the center part of the bottom of each box.

In operation the snow-fighting equipment is assigned to definite routes so arranged as to have each one completely covered at intervals between forty-five minutes and one hour. In addition the routes provide central conveying points for three or four sweepers, so that one can be diverted if necessity arises on some other route. In addition to the equipment a force of from eighty to one hundred men is constantly employed during the winter on all hills to keep the rails and switches in a safe condition, and during heavy snows this force is augmented from the construction department. As soon as a snow storm begins men are also sent out to sweep and salt every switch and intersection on the system. One prolific source of danger of blockades has been found in the packing of snow on top of fenders in the cars, and to obviate this men are stationed at various points on the system to shovel the snow off of the fenders, and to clear the vestibule windows and destination signs.

Testing the Equilibrium of Double-Deck Buses at Vienna

In making studies for the operation of double-deck auto buses, Ludwig Spängler, director Vienna Tramways, gave particular attention to the question of equilibrium to secure buses that would not tip over when swerving at their highest speeds under the worst possible conditions of grade and curvature. To this end experiments were made to find the permissible angular deviations from the perpendicular for double-deck buses with and without a covering for the upper deck.

As shown in the accompanying views, the allowable deviation was measured on a protractor fitted with a swinging pointer. One leg of the protractor was fastened at right angles to the side of the bus so that as the bus was tipped away from the perpendicular by putting blocks under one side of the body, the pointer swung away from 0 deg. accordingly.

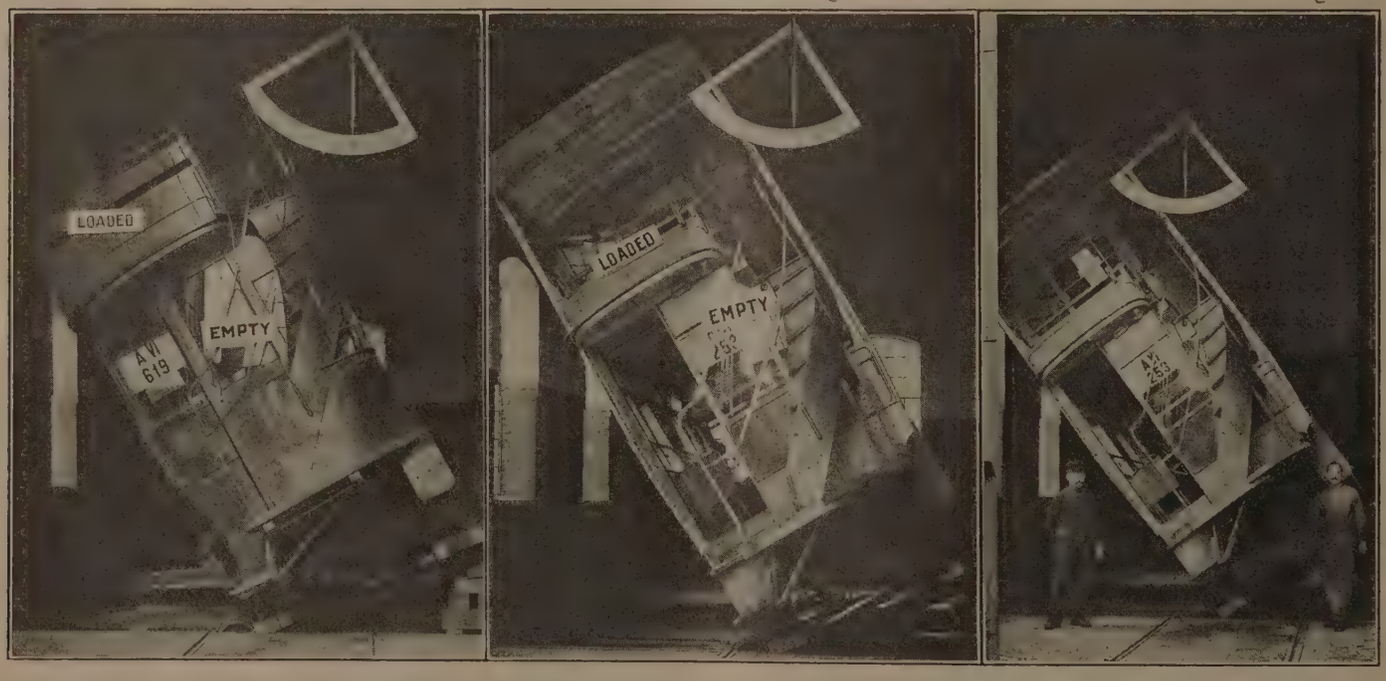
When empty the center of gravity of the fully-inclosed double-deck bus is not so low, of course, as that of one with an open top deck, but it was found to be low enough for safe operation. When loaded, however, the inclosed type devised by Mr. Spängler has the lower center of gravity because the "well" construction of the upper floor permits the upper seats to be nearly 16 in. lower than the corresponding seats of the Daimler open-top bus.

The tests with the protractor showed that when the open-top bus carried an upper deck load of fourteen 165-lb. bags of sand, and with no load on the lower deck, unstable equilibrium was reached at 31 deg. from the perpendicular. The angle for the fully-inclosed bus when carrying fifteen 165-lb. bags of sand, and with no load on the lower deck, was 33 deg. and this was increased to 40 deg. when the load from the upper deck was removed. All tests were made with gasoline vehicles.

Better Car Illumination Effects Other Economies

The original lighting scheme on the passenger cars of the Chicago, Lake Shore & South Bend Railway provided for fifty-two 23-watt, 120-volt lamps, five in series in a 600-volt circuit. These lamps were installed one over the back of each seat in a side-wall bracket attached to the window post and a row in the ceiling along the center line of the car. The improved lighting system includes seven 60-watt and five 25-watt Mazda lamps in a 98-volt circuit. The 60-watt lamps serve for general illumination while the 25-watt lamps are installed two in the destination sign, two on the rear platform and one in the toilet. The 60-watt lamps are placed in the ceiling along the center line of the car and are fitted with deep Alba shades set in locked sockets.

This change was a great improvement over the lighting scheme formerly used, which not only supplied too much light but did not distribute it properly. In fact,



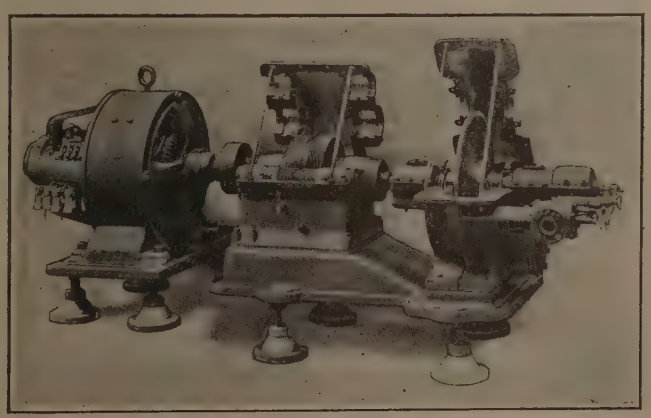
EQUILIBRIUM TESTS OF VIENNA BUSES—OPEN-TOP BUS LOADED ON UPPER DECK, EMPTY ON LOWER DECK, TIPPED 31 DEG.—CLOSED-TOP BUS LOADED ON UPPER DECK AND EMPTY ON LOWER DECK, TIPPED 33 DEG.—CLOSED-TOP BUS EMPTY ON BOTH DECKS, TIPPED 40 DEG.

the light from the lamps in side-bracket fixtures on the window posts was right in the line of vision of seated passengers, and as the light was supplied through thin filaments with energy at twenty-five cycles it was also irritating to the eye. The accessible location of the side brackets also increased the percentage of thefts. In fact, during some months the combined number of lamps broken, stolen or burned out amounted to more than 50 per cent. With the new lighting scheme it is estimated that the savings in lamp replacements and energy consumption will more than pay for the entire installation within one year. All wiring in the new system is in conduit and the circuits are taken off the 98-volt tap of the transformer which forms a part of the 6600-volt, single-phase car equipment. One of the most expensive parts of the improvement was included in replacing the side brackets on the window posts with coat hooks.

Small Geared Turbo Units

The Westinghouse geared turbo-generator set recently brought out is designed to meet the demand for economical turbine units of small capacity. This development was made possible by the Westinghouse reduction gear which permits the efficient coupling of a high-speed turbine to a low-speed generator. These sets are built with either a d.c. or an a.c. generator in capacities from 25 kw to 200 kw, standard voltages. The turbine is designed for condensing or non-condensing operation, as may be desired.

The turbine rotor consists of a single disk, on the periphery of which the blades are carried. On entering the turbine casing the steam expands in a suitable nozzle, passes through these blades and delivers to them



GEARED TURBO-GENERATOR SET

part of its velocity energy. On leaving the blades it enters a reversing chamber which redirects it to the blades. This process is repeated as many times as necessary to make efficient use of the energy in the steam.

The gear and the pinion are of the split helical type, mounted in an oil-tight case. Ample lubrication is provided by running the gear in a bath of oil. To make inspection easy, both turbine and gear casings are horizontally split, and all steam nozzles and reversing chambers are mounted in the lower half of the turbine casing. The turbine and gear are mounted on a common bedplate. The bearings are all ring-oiled and self-aligning, and require little attention.

The speed of the turbine is controlled by a centrifugal type governor, mounted on the turbine shaft and connected by a simple lever direct to the stem of the valve. The connection between gear and generator is made by means of a flexible coupling.

Alternating current generators furnished with these sets are of the self-contained revolving field units similar to standard Westinghouse belted and coupled types. They can be wound for two or three-phase sixty-cycle service, and any standard potential between 240 volts and 2400 volts. The d.c. generators furnished are all self-contained similar to the standard Westinghouse belted type, and can be wound for 125 volts and 250 volts, two-wire, and 250 volts, three-wire.

Telephone Train Dispatching on the Cedar Rapids & Iowa City Railway

The Cedar Rapids & Iowa City Railway has recently placed in successful operation a telephone train dispatching equipment covering the entire line. This road runs from Cedar Rapids south to Iowa City, a distance of approximately 30 miles, with a branch going east from Cedar Rapids to Mt. Vernon, an additional distance of 15 miles. This includes some of the best farming land in Iowa, where interurban traffic is exceedingly heavy. The passenger trains on the line are operated by electricity and the freight trains by steam.

DISPATCHER'S OFFICE, CEDAR RAPIDS & IOWA CITY RAILWAY

Along the route ten open stations are equipped with telephones and selective signaling apparatus. Sets containing the Western Electric selectors are used for signaling station operators and self-contained, folding-gate, telephone arms are used for the operators' talking apparatus. Six way-station outfits are installed between Cedar Rapids and Iowa City and two between Cedar Rapids and Mt. Vernon. The power house, the superintendent's office and the shop are also connected with the telephone distpatching circuit. The dispatcher is located in the shop-office building 2 miles south of Cedar Rapids and is in control of all points on the line.

A portable telephone set has been furnished to each train crew so that communication may be established with headquarters from various points along the line. These telephones are fitted with cords and plugs arranged for plugging in pole jacks which are placed at a convenient height on the telephone poles along the right-of-way. This equipment is especially valuable in emergencies. Nine pole jacks are placed on the Cedar Rapids and Iowa City division and six on the line to Mt. Vernon.

The normal traffic on this railway system involves the operation of thirty-eight passenger trains and four scheduled freight trains daily between 5 a.m. and 1 a.m. on the Cedar Rapids & Iowa City line and eighteen passenger trains and two scheduled freight trains between 5 a.m. and 12 o'clock midnight on the Cedar Rapids & Mt. Vernon branch. The telephone dispatching system has now been in use for some months and excellent results from every point of view, notably those of economy and efficiency of operation, are reported.

Automatically-Welded Electric Joints in Brooklyn

An entirely original method of carbon electrode rail welding was carried out between Nov. 7 and Nov. 18 for the Brooklyn Rapid Transit System by the Atlantic Welding Corporation, New York. The work comprised the installation of sixty-six joints in five-year old rail on the heavily-traveled downtown section of Fulton Street, between Court and Tillary Streets, Brooklyn. Owing to traffic conditions, all work was done between 10 p. m. and 5:30 a. m. and no work at all was permissible on Saturdays and Sundays.

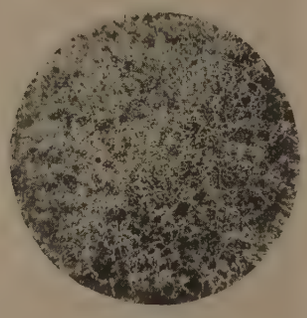
The rails of Lorain 398 and 423 section had been set on steel ties incased in concrete and had been secured to the ties with clips. In substituting the new welded

SAMPLE OF A COMPLETE WELD

joint for the riveted type these clips were removed with a cold chisel and the rail was welded directly to the ties. The rectangular joint plates, which support the head as illustrated, were made in lengths of 31 in. and 19 in., several compromise joints with these lengths being, of course, included. Twenty-six of the joints included 12-in. inserts. A metallic electrode process was used to fill the heads of excessively worn rails at joints and at the dishes opposite the joints. The job was finished by grinding to the original level.

The welding process itself is one which has already been used on a large and successful scale throughout Europe. Its salient features are two: The carbon electrode used is set in a carriage which is moved at a predetermined rate and in a manner which avoids all in-

EARLY WELD OF LORAIN NO. 395, 141-LB. RAIL



MICRO-PHOTOGRAPH OF SECTION THROUGH A WELD

equalities due to the varying skill of the welder himself; the welding current is not drawn through wasteful resistance but is taken at an efficiency of 90 per cent or more through a 550/70-volt European-Rosenberg motor-generator set which can withstand a short-circuit indefinitely.

A complete welding outfit consists of a covered wagon with the special motor-generator set mentioned, a marble switchboard of power-station type and two portable welding machines or carriages. In executing work, the carriages are operated inside of light-weight tents, which are readily set up or dismantled.

Each outfit has a crew comprising a foreman, two welders and two helpers, one welder and helper working at each carriage. While the special conditions in Brooklyn made work under the best conditions impossible, from twelve to fifteen joints have been made elsewhere per eight-hour day with one outfit and crew, so that the actual time necessary per joint is only twenty-five to thirty minutes. In numerous cases, eighteen joints per day have been made by five men. This rate will suffice to keep step with the tasks of the other track work gangs. If, however, it is necessary to increase the number means can be provided to make as many as twenty-five joints in one shift.

The welding process is purely automatic. After the beveled flat-bar plates have been adjusted, the welding carriage and the arcing element thereon are placed over the joint. The automatic feature lies in the condition that the carbon is set to travel at a predetermined rate over the line to be welded. The carriage is adjustable to any type of rail. The weld is obtained by making the arc fuse the two surfaces (plate and rail), a firm, composite structure being obtained with the help of feed-in material.

As shown in an accompanying micro-photograph of a weld made abroad, the transition in the composition of

MOTOR-GENERATOR WAGON AND TENTS

the metal from the plate to the material added and from that material to the head is very gradual and differs only in the percentage of carbon content. As the actual area welded is low in carbon, a junction of high ductility and great strength is obtained. In no case has a microscopic examination shown anything but a close-grained structure with an entire absence of "shoot offs" thus proving that the head had never reached a temperature high enough to change the molecular structure. The intrinsic value of the joints so produced is the firm support given to the head, and the tying together of the head and base to form a rigid box girder of solid section.

In the plant of the United Water, Gas & Electric Company, at Hutchison, Kan., which furnishes power to the Hutchison Interurban Railway, the body of a mouse grounded some important circuits in the station which stopped the railway and put out all the lights in the city. Many other industries depending on electric motors for power were also without energy for about an hour. It appears that the assistant engineer of the plant discovered the mouse and while he was trying to dislodge it from its precarious position without shutting down the plant the little animal jumped into a connection that electrocuted it and caused a serious short-circuit.

News of Electric Railways

DECISION IN PASSAIC GAS CASE

Highest Court in New Jersey Declares Franchises Must Be Valued for Rate-Making Purposes

A decision was rendered on Dec. 9 by the Court of Errors and Appeals of New Jersey upsetting the order of the Board of Public Utility Commissioners requiring the Public Service Gas Company to establish a 90-cent rate for gas in its Passaic district. The interest of this decision to electric railway companies lies in the fact that this rate was based on a valuation in which the commission made an allowance for "going concern" value, but made no special allowance for the value of franchises. The decision of the commission in this case was published on page 35 of the issue of this paper for Jan. 4, 1913. The decision was upheld by the Supreme Court, but was appealed to the Court of Errors and Appeals by the gas company, which is one of the constituent companies of the Public Service Corporation.

The decision of the court, rendered just as this issue was about to go to press, includes the following statement:

"When a public utility corporation is in the enjoyment of privileges to use streets and public places in this State for the purposes of its business, whether such privileges be conferred by the State alone or partly by the State and partly by the municipality, and whether they be exclusive or subject to duplication, such privileges constitute a special franchise which is property, is subject to taxation and has normally a substantial value; and in making a valuation of the property of such corporation for the purpose of establishing a basis for the regulation of rates to be paid to it by the public for its product or service, it is erroneous to assign no value, or a merely nominal value, to such franchise when a substantial value is fairly reflected in the total market value of its securiites."

The report justifies this decision by many citations and also upon grounds of equity. It also considers the statement of the commission that it was the policy of the State not to allow the capitalization of franchises for an amount in excess of the actual cost involved in obtaining such franchises. The court says that even if the franchises are not capitalized this is no reason for the exclusion of the franchise from a valuation for rate-making purposes, because, while the value of the franchise may not be included in the par value of the capital stock it affects its market value.

DES MOINES FRANCHISE MATTER

The Des Moines (Ia.) City Railway is awaiting action by the City Council on its petitions for a special election to vote on the question of granting a franchise. About 10,000 of the voters in the city, or more than half, have signed one petition calling for such an election. The law requires only about 5000 names on this petition. About 1500 property owners have signed a second petition calling for the same election. The law requires only 175 names on this petition. Both petitions were secured so that the city might proceed with both and thus meet the different requirements of two sections of the law governing franchise elections. This was done in order that the date of the election might be fixed without the necessity of delay due to legal proceedings to determine which section of the law should apply.

Members of the City Council, and Mayor Hanna especially, have seen fit to delay the proposition indefinitely and continuously in spite of every effort on the part of the company for speedy action. When the Council refused action on the petitions the company finally took the question to the courts, and in the lower tribunal the decision was soon reached. An appeal has been made to the State Supreme Court and that body has advanced the hearing to Dec. 21. The company's only interest in this decision is to avoid any doubt about the legality of the proceedings. In the meanwhile the city might have proceeded under both sections so that there would be no uncertainty. Instead the city has refused to proceed under either.

Mayor Hanna has stated several times that he proposed to fix Jan. 16 as the date for the election, but he has not yet fixed any date. It has been proposed recently that a vote on the local saloon question be taken at the same time as the vote on the city railway franchise. Mayor Hanna also has proposed to submit a series of amendments to the proposed franchise at the time of the election, but it is thought unlikely that he will be able to do this since the petitions call for an election on the specific franchise called for by the company and none other.

MUNICIPAL OWNERSHIP IN SEATTLE

City Apparently Divided Over Question of Continuing Present System

As a culmination of the controversy waged in Seattle, Wash., the last three years over the question of municipal operation of electric railways, several members of the City Council now advocate disposing of the existing municipal railway system. The leader of the faction in favor of selling the lines was elected to the City Council last year largely on account of his advocacy of municipal ownership, but he is now arrayed on the other side. This state of affairs is attributed to a considerable extent to the filing of a suit on Nov. 27 by the State on behalf of the state board of accountancy against the City Council of Seattle, the Mayor, city treasurer, city comptroller and former Mayor Cotterill to recover money alleged to have been illegally appropriated for the rehabilitation and operation of the Lake Burien Railway outside of the city limits, the second unit in the city's railway system.

The Lake Burien line was accepted as an unincumbered gift from its promoters, property owners along the right-of-way, and $25,000 was appropriated by the City Council to rehabilitate the line. Later $9,000 was appropriated to form an operation fund for this line and Division A of the municipal lines. Since the beginning of operation there has been a deficit each month which has remained a charge against the general fund. Three miles of the Lake Burien line lie outside of the city limits. As if to anticipate the action for recovery of the appropriation a rider to abolish the accountancy board was placed on the ballots which went before the voters at the recent general election, but this issue was defeated at the polls. The attorney-general hopes to establish through the suit whether cities of the State can operate public utilities outside the city limits.

The municipal system of Seattle has been described previously in the ELECTRIC RAILWAY JOURNAL. It consists briefly of a line known as Division A, 4.2 miles long, running from the business district to the mill district of the city, and of the Lake Burien line, 9 miles, which extends from the extreme southern end of the city to Lake Burien. There is a distance of practically 2 miles between the two divisions. The advocates of the municipal railway system have proposed connecting the lines with a motor bus service, and have endeavored to add the Seattle, Renton & Southern Railway to the municipal system. This line traverses the Rainier Valley practically parallel with the Lake Burien line, but 2 miles or 3 miles distant. It crosses the business section of Seattle, however, and could be connected with Division A, but it could not be connected with the Lake Burien line except at considerable expense.

The constant heckling indulged in by members of the City Council has apparently served no purpose except to keep many of the outlying districts of the city without adequate transportation facilities. In five years no extensions of the lines of the Puget Sound Traction, Light & Power Company have been built in Seattle because of the unreasonable demands of a City Council which was determined upon converting the lines of the city into a municipal system.

A resolution since introduced in the Council by A. Allen Dale providing for the sale of Division A and C of the municipal railway has been tabled pending a decision in the suit of the State against the city alleging misappropriation of funds. Mr. Dale advocates the plan of placing the matter

of selling the lines before the electorate at the municipal election in Seattle in March.

TOLEDO NEGOTIATIONS HALTED

Nothing has been done toward renewing the negotiations between the city of Toledo, Ohio, and the Toledo Railways & Light Company since the franchise committee of the City Council announced that it had completed a franchise similar in many ways to the one prepared by the company in the first place. It is understood, however, that the draft prepared by the franchise committee contains some requirements objectionable to the company. Copies of the ordinance are in the hands of the attorneys, but they have not as yet been made public.

In overruling the demurrer filed by the Toledo *News-Bee* in the case of the United States against the Toledo Newspaper Company and N. D. Cochran, Judge Killits announced on Dec. 4 that the case would go to trial on its merits on Dec. 28. This is the action in which the defendants were cited for contempt of the Federal Court because of certain publications relating to the receivership case of the Toledo Railways & Light Company, and meetings conducted by so-called agitators after the court had rendered a decision, restoring the old rate of fare pending a final settlement of the franchise question.

CLEVELAND SUBWAY AND LABOR MATTERS

It is stated that the freight subway project under East Fifty-fifth Street, Cleveland, Ohio, as planned by O. C. Barber, Barberton, will depend largely upon the establishment of the harbor line at the foot of the street where he has planned to erect extensive coal and ore docks. The subway would connect the proposed docks with the railroads in the Cuyahoga valley.

Cleveland motormen and conductors are arranging to request the State Industrial Commission to investigate working conditions in the city. They contend that the State law provides for eight hours of continuous rest out of each twenty-four for railway employees and that the commission has authority to investigate and enforce the law. They will, however, ask Attorney-General Hogan for an opinion on the State law before they appeal to the commission.

Several minor amendments to the proposed grant to the Cleveland Rapid Transit Company were submitted at the regular meeting of the City Council on the evening of Dec. 7 and the ordinance was placed back on its second reading.

PROGRESS ON BOSTON SUBWAY CONSTRUCTION

Steady progress is being made in the construction of the Dorchester tunnel and the East Boston tunnel extension, at Boston, Mass., under the direction of the Boston Transit Commission. The former is now completed from Tremont Street to Washington Street, under Winter Street, and the Washington Street station, between Washington and Arch Streets, is completed except for interior finish and equipment. This station is a two-story structure. Transfer between Cambridge subway and Washington Street tunnel and Dorchester trains will be made at the station through passageways or lobby connections. East of this station 270 ft. of tunnel built in open cut is completed, the remaining section of 760 ft. connecting with Dewey Square and the South Station being under construction by the tunneling method. Work has been started on the Dewey Square section, which is to be 800 ft. long.

The East Boston tunnel extension, which connects Scollay Square with the West End, will have stations with island platforms at Scollay and Bowdoin Squares. An inclined elevator will be provided at the former station, which is being built below the Tremont Street subway. The existing entrances will serve for both stations, with an additional entrance at the north side of the square. Between Scollay and Bowdoin Squares the tunnel is a double-barreled structure and throughout the entire extension space for two tracks is provided. West of the Bowdoin Square station an underground loop will be built to enable a portion of the East Boston cars to be turned back at this point, and a switch-back will be installed east of Scollay Square to reverse various Cambridge trips. The general work of construction is practically completed with the exception of the finishing of the stations and the reconstruction of the tunnel between Washington Street and Scollay Square.

MISGIVINGS IN SAN FRANCISCO

"Chronicle" Wants City to Apply Business Principles to Municipal Line

In the issue for Dec. 2 the San Francisco *Chronicle* said in part in an editorial headed "Our Municipal Railroads":

"The profit in owning and operating a street railroad system is made by a very trifling percentage of each fare paid. Now that this city has engaged in the railway business, we all wish it to be successful. The net income ought to be sufficient to make good all that we lose by taxes which private owners have paid, and in addition to pay off all indebtedness incurred in building the system within such a reasonable term as would be accepted by a private company as the period of a franchise. Extensions must be made only when they will pay for themselves during such a period. Upon any other basis, either the taxpayers or those who ride on the cars will have partly to pay for other people's rides. If any section of the city wants a railroad not likely to pay within a reasonable time, the property owners who will benefit by it ought to pay for it.

"In this city we already see different sections vigorously fighting each other before the Supervisors in regard to the location of new railroads. In no case does any faction present figures to show that the road they desire will be profitable. We are already operating lines which for the present are unprofitable, and are operated out of the profits of the paying properties. It is useless to ignore the fact that if the construction of new lines be left entirely to Supervisors their action will be largely determined by its probable ultimate effect on votes. And that is the very worst way there is to fix locations. This scramble for street railroad and other improvements is at the bottom of the movement to return to our old plan of electing Supervisors by wards. The present management of our municipal railroads is competent. Any management if left to itself will strive to make the best possible showing. Such city administrations as we have sometimes had would take care that there was a management to suit them, but that rests with the people. But there should be sufficient backbone in the government to run our street railroads on business principles."

CONSTRUCTION IN TENNESSEE AND KENTUCKY

The extension of existing electric interurban lines and the construction of several others which are definitely projected and some of which are surveyed, are engaging the attention of middle Tennessee and south-central Kentucky. These lines will radiate from Nashville, Tenn., and in connection with two lines already in operation will traverse some of the richest territory in the United States. As has been noted previously, the Nashville & Gallatin Railroad is to build a branch, leaving the main line at Goodlettsville and extending to Springfield, Robertson County, and ultimately to Clarksville, in Montgomery County, passing through Guthrie in southern Kentucky. All of this is a rich tobacco and grain growing section. The same company has outlined an extension northward from Gallatin to Bowling Green, in Warren County, Ky.

An important extension from the line of the Nashville & Franklin line is already under way. Known as the Middle Tennessee Interurban Railroad, it will extend from Franklin, through Eaglesville, Shelbyville, Fayetteville, all in Tennessee, to Huntsville, Ala. The 23 miles between Franklin and Eaglesville is already graded.

Of the new projects, the Tennessee & Kentucky Interurban Railroad is perhaps the most important. This line, as has been indicated, will extend from Nashville, across the State line to Adairville, in Logan County, thence connecting with Russellville, the county seat, and ultimately being extended to Franklin, seat of Simpson County, Ky. The Cumberland Valley Interurban Railway has its line surveyed through Wilson County to Watertown, Alexandria, Smith-

ville, McMinnville and Sparta, from which branches are projected to Lebanon and the Hermitage, the old home of Andrew Jackson. The Nashville & Murfreesboro Interurban Railway is projected to pass through Davidson and Rutherford counties, extending ultimately to Woodbury, seat of Clinton County, while there are various other projects in process of organization, it is said, to build lines from Nashville to Ashland City and out the Charlotte Pike. The Nashville Traction Company is reported to be planning an interurban extension out the Murfreesboro Pike to Una.

The project to build the interurban railway to connect Lexington, Ky., and Richmond, Ky., has received further stimulus from the fact that Lexington's new Board of Commerce is considering it. Louis des Cognets, former president of the Lexington street railway system, said recently:

"Even should the Kentucky Traction & Terminal Company be disinclined to build the line, it has given assurance that it will co-operate in a most friendly spirit with any company operating cars into Lexington from Richmond. The line to Richmond is one of the most important definite plans for the benefit of the whole community that the Board of Commerce can take up."

Costly bridge construction necessary to span the Kentucky River, which has cut a wide deep channel between the two towns, has previously acted as a deterrent to the building of the line. Mr. des Cognets, however, urges that the state law permits toll bridges and that these tolls could be made to meet the fixed charges of such a structure, the cost of which is estimated at $250,000.

Third Track in State Street, Chicago.—The Chicago (Ill.) Surface Lines is asking permission to build an additional third track in State Street, in order to do away with "switchbacks" and to provide loops for cars from the west, northwest and southwest sides.

Washington Air-Brake Order.—The Public Service Commission of the District of Columbia has denied the application of the Washington Railway & Electric Company for an extension of sixty days from Dec. 31, 1914, in which to install air brakes on all cars weighing sixteen tons or more.

Employees Want New Laws.—On Jan. 11 representatives of electric railway employees from all sections of Ohio will meet at Columbus to plan a campaign for the enactment of laws for the regulation of working conditions on electric railways. The call for the meeting was sent out by the Amalgamated Association.

Transportation Commission Favored.—Mayor Hocken of Toronto, Ont., at the recent luncheon of the Municipal Improvement Association in that city, delivered a speech favoring the appointment early next year of a transportation commission to plan civic car line extensions with a view to their unification in 1921 with the present system as operated by the Toronto Railway.

Recovery of Benefit Fund Payments Allowed.—Chief Justice Shepard of the Court of Appeals of the District of Columbia decided on Dec. 9 that an employee of the Philadelphia & Baltimore Railroad was entitled after discharge by the company to recover from the railroad the amounts of money he had paid into the company's benefit fund. The man who sued for recovery had been in the employ of the company twenty years.

Toronto Suburban Railway Rights.—City Solicitor Johnston, of Toronto, Ont., reporting to the Board of Control on Dec. 3 on the rights and privileges held by the Toronto Suburban Railway pointed out that the company had what practically amounted to a perpetual franchise, as provisions were made for its renewal in September, 1929, and at the end of every twenty years thereafter. The only way the city can acquire the rights of the company is by purchase in 1929 or at the end of any other twenty-year period, either by agreement or arbitration.

Service Conference in Pittsburgh.—J. D. Callery, president, and P. N. Jones, general manager of the Pittsburgh (Pa.) Railways conferred with Mayor Joseph G. Armstrong and City Solicitor C. A. O'Brien on Dec. 11 relative to the points at issue between the company and the city. The matter of the suit brought during the term of Mayor Magee to enforce the payment of the car tax was not mentioned, as this is to be handled separately. While transfers, rerouting, street cleaning, track repairing and the establishment of a shuttle between downtown Pittsburgh and the North Side were discussed nothing definite was decided upon. Another conference will be held soon.

The New Haven Indictments.—The case of the indictments against a number of the directors of the New York, New Haven & Hartford Railroad was called in the United States District Court before Judge Rudkin on Dec. 4. Pleas of not guilty were entered for William Rockefeller, Robert W. Taft, Charles F. Brooker, Frederick F. Brewster, D. Newton Barney and Henry K. McHarg. Pleas claiming immunity were entered for William Skinner, James S. Elton and George F. Baker. A. Heaton Robertson and James S. Hemmingway also entered pleas of not guilty. John L. Billard, Edward A. Robins and Thomas De Witt Cuyler have also entered immunity pleas. The remainder of the twenty-one directors indicted for violation of the Sherman law have already entered pleas of not guilty.

Confiscation of Mexican Tramways Reported.—W. E. Pearson, at the New York office of the Pearson Engineering Corporation, Ltd., confirmed the statement recently attributed to Dr. F. S. Pearson, president of the Mexico Tramways, that the latter had received a cable on Dec. 2 from his representative to the effect that the property had been confiscated by the political factions now in control of the city government. The treasurer and other officers were ordered to leave the service forthwith. Both the British and the Brazilian authorities in Mexico City are said to have filed protests. No other advices regarding this matter had been received up to Dec. 9. According to recent reports the Zapatistas have not in any way disturbed the Mexican Light & Power Company, which supplies the tramway, the city and private customers with light and power.

Public Utility Commission Legislation Likely.—The question of a public utilities commission for Michigan, which was before the Legislature two years ago, will probably come up again at the session this winter. It is understood that Governor Ferris and the members of the Michigan Railroad Commission will back the bill, while the Republican state platform pledged the support of that party to such a bill. Two years ago two bills for a utilities commission were before the Legislature, one copied after the Indiana law and the other drawn up by Chairman Hemans of the State Railroad Commission. Both died in committee. Mr. Hemans is now at work on another bill for presentation at the coming Legislature, but his plans are tentative as to what it shall contain. Governor Ferris, it is understood, will make a special plea for a public utilities commission in his message to the Legislature.

Forestall Complaints.—In an editorial "Forestall Complaints Before They Happen," *Printers' Ink*, a journal for advertisers, after quoting from the article "The Importance of Good Public Relations," written by Theodore P. Shonts, president of the Interborough Rapid Transit Company, for the convention issue of the ELECTRIC RAILWAY JOURNAL, says in its isue of Dec. 10: "With Mr. Shonts we are in hearty accord, but *Printers' Ink* would go one step farther. A well-conducted advertising campaign along the general lines of that conducted by the American Telephone & Telegraph Company would forestall most of the complaints before they happen. The American public is not only a reading and a thinking public; it is a public pretty thoroughly alive to the sense of fair play. An understanding of the fundamental problems which 'big business' is forced to solve will go far toward removing hostility on the part of the great mass of the people. In no way can that understanding be given so easily and so quickly as by advertising."

New York's Subway Labor Problem.—The Public Service Commission for the First District of New York has been served with an injunction, otained by William E. Heim, a taxpayer of New York City, restraining it from taking any action to forfeit any construction contract on the new rapid transit lines on account of the alien labor clause of the State labor law, or from withholding payments to such contractors because of violations by them of this clause. Argument on the preliminary order was had in the Special Sessions Court on Dec. 4. It is expected that the decision of this court will be appealed to the Appellate Division and from there to the Court of Appeals, so that the judgment

of the court of last resort may be obtained. The application for the injunction is based upon the allegation that the provision of the labor law forbidding the employment of non-citizens upon public work is unconstitutional and a violation of the treaty between the United States and the Kingdom of Italy and similar treaties with other nations in the most favored nations class.

Reports Requested Regarding Seattle Purchase.—Preliminary to further consideration of the proposition for the purchase of the Seattle, Renton & Southern Railway by the city of Seattle for a consideration of $200,000 in municipal railway bonds and 20 per cent of the gross earnings for a period of twenty-eight years, payable annually, Mayor H. C. Gill recently conferred with the heads of the various departments of the city government on the various phases of the project. The Mayor has asked A. L. Valentine, superintendent of public utilities, to report on the cost of operation of the line by the municipality, the cost of such reconstruction as will be necessary in bringing the tracks to the established grades, and matters of like nature. A. H. Dimock, city engineer, has been requested to furnish an estimate of the cost of grading and regrading the 18 ft. of Rainier Avenue now occupied by the tracks of the Seattle, Renton & Southern Railway. J. D. Ross, lighting superintendent, will report on the estimated cost of current sufficient to operate the line in connection with Division A and the Highland Park & Lake Burien Line, Division C, as well as the advantages that will accrue to the light and power department by city operation of the line. James E. Bradford, corporation counsel, will report on the various suits against the Seattle, Renton & Southern Railway, now in court.

PROGRAMS OF ASSOCIATION MEETINGS

New England Street Railway Club

The regular monthly meeting of the New England Street Railway Club will be held at the American House, Boston, Mass., on Dec. 17. H. A. Bullock, staff assistant to the president of the Brooklyn (N. Y.) Rapid Transit Company, will speak on "The Employee's Welfare." His address will be followed by a discussion in which it is expected that representatives of large corporations in other kinds of business who have had extended experience along this line will take part. The dinner which precedes the meeting will be served at 6 p. m.

American Wood Preservers' Association

The eleventh annual convention of the American Wood Preservers' Association will be held at the Congress Hotel and Annex, Chicago, on Jan. 19, 20 and 21, 1915. The subjects to be treated in papers are as follows:

"Treated Timber for Factory Construction," by F. J. Hoxie, engineer and special inspector of the Associated Factory Mutual Fire Insurance Companies.

"Temperature Changes in Wood under Treatment," by George M. Hunt of the Forest Products Laboratory, Madison, Wis.

"Sill Ties," by F. J. Angier, secretary-treasurer of the association.

"New Data on Properties of Creosote Oil," by Dr. Herman von Schrenk.

"Facts on Treated Ties," by J. H. Waterman, superintendent of timber preservation of the Chicago, Burlington & Quincy Railroad.

"Bleeding and Swelling of Paving Blocks," by Clyde H. Teesdale, in charge of wood preservation at the Forest Products Laboratory, Madison, Wis.

"Economical Use of Steam in Connection with Wood Preserving Plants," by A. M. Lockett, mechanical engineer, New Orleans, La.

"Mechanical Life of Ties as Affected by Ballast," by Earl Stimson, engineer maintenance of way of the Baltimore & Ohio Railroad.

"Determining the Soundness of Timber before Treatment," by C. M. Taylor, superintendent of the Port Reading Creosoting Plant.

"Facts on Creosoted Piling," by T. G. Townsend, piling inspector of the Southern Railway.

"A Problem in Air Seasoning Ties," by A. H. Noyes, assistant treasurer of the Ayer & Lord Tie Company.

Financial and Corporate

RECENT FINANCIAL TENDENCY

The sales of bonds on the New York Stock Exchange on Dec. 9 totaled $1,736,000, par value, as compared with $1,395,500, par value, for the same day last year. This is much the largest day's business in bonds since public trading was resumed. Price movements on the average showed a further gain, but there were reactions in some securities which have lately experienced unnatural advances. Despite the approaching opening of the Stock Exchange for trading in stocks, sterling rates remain normal. Money continues easy. It is not regarded as likely that rates will be materially affected by any borrowing which may be made following the reopening of the exchange for public trading in stocks. Trading in stocks through the clearing house, according to the reports issued on Dec. 9 by the New York Stock Exchange, presented many interesting features. The most important changes reported during the day were in the railroad issues.

CHICAGO TRACTION ACCOUNTING CONTROVERSY

The report of the special audit of the books of the Chicago Railways and the Chicago City Railway being made by the city administration has just been published. That for the Chicago Railways was made by M. & L. W. Scudder, of New York, and that for the Chicago City Railway by Barrow, Wade, Guthrie & Company. In both cases the books were found without important error. The corporation counsel of the city, however, has recommended certain changes in the accounts to which paving and the removal of obstructions should be charged, although both of these questions have either been covered by specific provisions in the ordinance or publicly discussed and decided by the Board of Supervising Engineers, which has had the sole authority under the ordinance in these matters. It has been estimated that these changes, if made, would reduce the Chicago Railways' capital account $6,945,130 and make it necessary to pay the city traction fund $584,264, and that the company should also credit its renewal account with $531,965, and, similarly, that the capital account of the Chicago City Railway would have to be reduced approximately $5,138,000.

Regarding this controversy Henry A. Blair is quoted as saying, in an interview, that the books of the two railway companies have been audited each year by accountants selected by the city and approved by the companies. Through these audits the city comptroller was familiar with the methods of the Board of Supervising Engineers in charging every item which is now sought to be questioned by the Mayor. On these audits the companies have made seven annual settlements with the city, having turned into the traction fund more than $13,000,000,

On the special audits during Mayor Busse's administration the city and the companies had expended approximately $100,000, of which the city has borne 55 per cent. In the audit just completed the city again appropriated $50,000 of its own funds for the work. It would seem that this constituted a liberal expenditure for auditing purposes. Moreover all these firms have reported that the railway companies were conforming to the terms of the 1907 ordinances and the decisions of the Board of Supervising Engineers. The accountants engaged on the work at the present time were not called upon to show what would have been the results of operation during this seven-year period if the companies had followed the ordinance and the decisions, but if they had followed the opinions rendered by corporation counsel. Mr. Blair did not consider these criticisms therefore worthy of serious consideration. Speaking from the standpoint of a financial representative he did not believe that the controversies of this nature were at all helpful either to the city or to the railway companies.

Mr. Blair is also quoted as saying that during the seven-year period the companies had never at any time earned more than a fair rate of return upon the capital fixed by the actual purchase price of the city. The rate of return has been about 7 per cent, which includes the 5 per cent return upon the purchase price, the companies' 45 per cent of the visible net receipts and all construction profits. This rate of return he stated was less than that earned by other public utilities in the city of Chicago.

ANNUAL REPORTS

Eastern Pennsylvania Railways

The consolidated statement of income, profit and loss of the Eastern Pennsylvania Railways, Pottsville, Pa., for the twelve months ended June 30, 1914, follows:

Gross earnings	$826,415
Operating expenses and taxes	503,487
Net earnings from operation	$322,928
Deduct underlying companies charges	45,525
Balance	$277,403
Interest on bonds	$164,863
Other interest and rentals	13,630
Total	$178,493
Surplus for year	$98,909

As compared with the year ended June 30, 1913, the gross earnings increased $56,735, or 7.37 per cent, and the operating expenses increased $67,483, or 15.48 per cent. The net earnings, therefore, decreased $10,748, or 3.22 per cent, while the net profit for the year decreased $19,463. The various departments showed the following earnings results: Railway, an increase of $13,576; electric, an increase of $43,415; gas, a decrease of $55, and park, a decrease of $201. The increased operating expenses were partly caused by higher cost of labor and extra maintenance. Railway maintenance increased by $23,900 to a total of $88,390 for the year, while the cost of transportation increased $13,000. There was charged to capital accounts during the year $115,689, of which $57,666 was for the railway department and $58,023 for the electric department.

San Francisco-Oakland Terminal Railways

Price, Waterhouse & Company recently completed an audit of the books of the San Francisco-Oakland Terminal Railways for the fiscal year ended June 30, 1914, and submitted the following income statement for that period:

Operating revenues	$4,515,798
Operating expenses:	
Maintenance of way and structures	$400,972
Maintenance of equipment	284,081
Traffic	25,398
Conducting transportation	1,923,966
General and miscellaneous	295,503
Total operating expenses	$2,929,920
Net operating revenue	$1,585,878
Deduct:	
Taxes and licenses	239,000
Net revenue	$1,346,878
Add:	
Miscellaneous income	125,964
Net income before charging interest, amortization of premiums and discount on bonds and notes, and depreciation of road and equipment	$1,472,842
Deduct:	
Interest on bonds	$859,268
Interest on collateral trust notes	175,000
Miscellaneous	23,232
Total	$1,057,500
Profit after charging all interest, but before providing for amortization of premiums, and discount on bonds purchased, and depreciation of road and equipment.	$415,342
Deduct:	
Amortization of premiums and discount on bonds purchased	10,491
Profit after charging all interest, but before providing for depreciation of road and equipment	$404,851
Add:	
Interest charged by company to capital assets	240,101
Balance carried to surplus account	$644,952

The operating expenses of the company for the fiscal year consumed 64.9 per cent of the operating revenues, divided as follows: maintenance of way and structures, 8.9 per cent; maintenance of equipment, 6.3 per cent; traffic, 0.6 per cent; conducting transportation, 42.6 per cent, and general and miscellaneous, 6.5 per cent. Taxes and licenses absorbed 5.3 per cent of the operating revenues, leaving net revenue of 29.8 per cent. Miscellaneous income constituted 2.8 per cent of the operating revenues, so that the net income before charging interest, amortization and depreciation was 32.6 per cent of the operating revenues.

The auditors report net additions to capital account of $510,927 for road and $105,923 for equipment, a total of $616,850. These amounts are those existing after considerable writing down of the value of land and writing off of the value of abandoned structures. The total amount of bonds outstanding as of June 30, 1914, is certified to amount to $16,656,000 in the hands of the public and $3,256,000 pledged as security for the Oakland Railway notes, making a total outstanding amount of $19,912,000.

The profit of $404,851 after charging all interest, including the interest properly chargeable to capital, does not provide for sinking fund payments. While amply able to maintain itself in excellent operating condition, therefore, the property evidently is not in a position to undertake new construction until, through refinancing, new capital has been obtained.

Barcelona Traction & Light Company, Barcelona, Spain.—Owing to the present European war, the Barcelona Traction, Light & Power Company was unable to meet the semi-annual interest coupons due on Dec. 1 on its outstanding £1,500,000 of first mortgage 5 per cent bonds. According to a statement from the Toronto office, the war has rendered it impossible to continue the arrangement made last June for providing the funds required for the completion of the present program of construction. The board, however, has under consideration a plan which would provide the company the necessary funds for completing the work under construction and for adjusting computing interest. The enterprises of the company at present in operation are said to show satisfactory results, with a steadily increasing revenue. This company was formed in 1911 by F. S. Pearson and associates and it either owns or controls virtually the entire tramway, light and power business of not only the city of Barcelona but the whole district of Cataluna, the industrial center of Spain.

California Street Cable Railroad, San Francisco, Cal.—J. Barth & Company, San Francisco, have purchased the $384,000 of new general first mortgage 6 per cent serial refunding gold bonds of the California Street Cable Railroad, dated Jan. 1, 1915, and due in twelve annual installments beginning Jan. 1, 1916, and ending Jan. 1, 1927. These bonds were referred to in the ELECTRIC RAILWAY JOURNAL of Oct. 31, Nov. 21 and Dec. 5.

Chicago (Ill.) Elevated Railways.—At the annual meeting of the Chicago Elevated Railways collateral trust the trustees reduced the governing board from seven to five members. Ira M. Cobe and F. A. Delano, who joined the Federal Reserve Board in Washington, withdrew. It was not thought necessary to fill their places. The board now stands: Frank A. Vanderlip, Henry A. Blair, Samuel Insull, E. W. Harden and Samuel McRoberts. The governing committee will elect the executive committee at a later meeting. There are three members of that body, Samuel Insull, Henry A. Blair and Ira M. Cobe. Mr. Cobe has tendered his resignation, but his successor has not as yet been selected.

Cumberland County Power & Light Company, Portland, Maine.—It was stated in the ELECTRIC RAILWAY JOURNAL of Nov. 21 that the Cumberland County Power & Light Company has certified and guaranteed, principal and interest, $500,000 of bonds of the York County Power Company, a subsidiary. Of this amount $315,500 are outstanding in the hands of the public, $150,000 are in the treasury of the Cumberland County Power & Light Company and $34,500 are in the treasury of the York County Power Company. The $315,000 outstanding includes $100,500 of bonds which have been exchanged for an equal amount of underlying liens. There has been no offering of these bonds.

Federal Light & Traction Company, New York, N. Y.—E. N. Sanderson, president Federal Light & Traction Company, has issued a circular regarding the recent deferring of dividends on the company's $2,500,000 of 6 per cent cumulative preferred stock, as noted in the ELECTRIC RAILWAY JOURNAL of Dec. 5. The net income of all companies for the twelve months beginning September, 1913,

is said to have been adversely affected by the disastrous fire at Hot Springs, the serious strike in the Trinidad coal fields, and the drastic rate schedules in Tucson, Ariz., and Springfield, Mo. In the opinion of the board, however, the turning point has been passed, and from now on the company will enjoy increased gross and net earnings. During the last twelve months the gross earnings showed an increase over the corresponding previous period, and only the net earnings suffered substantially from the adverse condition. Since July the net income has been constantly improving, so that during the three months ended Oct. 31 the dividend on the preferred stock has been more than earned.

Fresno (Cal.) Interurban Railway.—The Railroad Commission of California has granted the application of the Fresno Interurban Railway for permission to make three stock and bond issues to provide for twenty-six miles of new line at an estimated cost of $17,300 per mile.

Interborough Rapid Transit Company, New York, N. Y.—An extra dividend of 5 per cent has been declared on the $35,000,000 of stock of the Interborough Rapid Transit Company, along with the regular quarterly payment of 2½ per cent, both payable on Jan. 2 to holders of record on Dec. 21. Since the Interborough-Metropolitan Company owns $33,912,800 of the stock, its income from the extra disbursements is $1,695,640. The committee on listings of the New York Stock Exchange has received an application from the Interborough-Metropolitan Company to list $17,942,000 of 5 per cent cumulative preferred stock. This is the stock that was formerly in the hands of the voting trust and does not represent an increase in the capitalization of the company.

Joliet & Eastern Traction Company, Joliet, Ill.—The bondholders of the defunct Joliet & Southern Traction Company have almost unanimously decided to accept stock in the Joliet & Eastern Traction Company in exchange for their holdings. The formation of this new company was described in the Electric Railway Journal of Nov. 21. The greater part of the $80,000 fund paid into court during the period of bankruptcy of the Joliet & Southern Traction Company will be practically all turned into the treasury of the new company.

Kentucky Securities Corporation, Lexington, Ky.—The annual report of the Kentucky Securities Corporation for the fiscal year ended June 30 is made up principally of a report for the Kentucky Traction & Terminal Company and the Lexington Utilities Company, all the stocks of which are owned by the Kentucky Securities Corporation. The combined operating revenue of the two subsidiary companies, exclusive of inter-company charges, amounted to $782,272 for the last fiscal year, as compared to $742,884 for the previous year, an increase of 5.3 per cent. Operating expenses in the two years were $412,509 and $401,507, an increase of 2.7 per cent. Miscellaneous income increased from $29,941 to $32,022 and fixed charges from $225,268 to $245,184, while the final surplus increased from $146,049 to $156,600, or 7.2 per cent. The operating companies as of June 30 had a credit balance in the reserve for accidents and damages of $27,550, and it was directed that $24,000 should be credited to the depreciation reserve as of June 30. A fixed proportion of gross earnings is set aside monthly on account of maintenance, amounting for the current year to 16½ per cent.

Lehigh Traction Company, Hazelton, Pa.—The Lehigh Traction Company, reversing its previous decision as noted in the Electric Railway Journal of Nov. 28, paid on Dec. 1 the interest due on its first mortgage 5 per cent bonds. The protective committee representing the bondholders refused to accept the offer of President Markle to purchase the bonds for his personal account, as they had done in connection with the interest default on June 1.

Long Island Railroad, New York, N. Y.—The 5 per cent equipment trust series A of the Long Island Railroad, the authorization of which by the Public Service Commission for the Second District of New York was noted in the Electric Railway Journal of Oct. 24, consist of a total authorized issue of $1,060,000. Of this amount $1,050,000 is issued and outstanding. The trusts are dated June 1, 1914, and mature $106,000 on June 1, 1915, and June 1 of each succeeding year to 1923, inclusive, and $96,000 on June 1, 1924. The principal and the interest are payable in gold and are guaranteed by the Long Island Railroad. The cost of equipment is $1,175,262, of which the railroad has paid to the trustees $125,000.

Massachusetts Electric Companies, Boston, Mass.—George C. Lee has been elected a trustee of the Massachusetts Electric Companies, succeeding the late Gardiner M. Lane.

Massachusetts Northeastern Street Railway, Haverhill, Mass.—The Massachusetts Northeastern Street Railway on Nov. 28 filed a mortgage for $2,000,000 at Lawrence to the American Trust Company, Boston, Mass., as trustee. This mortgage takes the place of an original one issued in 1903 to the New York Trust Company, New York, which is discharged. The filing of the new mortgage simply provides for a change in the fiscal agent of the corporation.

Mexico Tramways, Mexico City, Mexico.—Officers of the Mexican Light & Power Company, a subsidiary of the Mexico Tramways, recently notified the holders of the $9,733,333 of second mortgage fifty-year sinking fund bonds that the payment of the interest coupons due on Dec. 1 would be deferred. The rate of exchange has been falling continuously in the last few months and the Mexican government officials, who are now in control of the operations of the Mexico Tramways, have prohibited further remittance of funds from Mexico until the rate of exchange improves.

New York (N. Y.) Railway.—At the annual meeting of the New York Railways on Dec. 7 Darwin P. Kingsley, F. S. Witherbee, Henry Ollesheimer, F. L. Leland and J. C. Cobb were elected directors to represent the holders of the 5 per cent income bonds. Harry Bronner, Guy E. Tripp, A. J. Hemphill and E. S. Marsten retired. Mr. Cobb was re-elected. A statement of the company's income for the four months ended Oct. 31, last, was read by T. P. Shonts, president. It showed that the gross revenue for the period, October being partly estimated, was $4,618,000, as against $4,828,000 last year, and a surplus over interest charges available for the income bonds of $425,000, against $508,000 last year. The so-called Kingsley insurance company interests already have a suit pending in the courts to decide what constitutes a proper allowance for injury and damage claims or whether or not all surplus revenue not actually paid out in any given year shall be applicable to the adjustment of income bonds. The contention of certain bondholders has been that all surplus revenues not actually paid out during any year should be applicable to the payment of interest on the income bonds. Darwin P. Kingsley is president of the New York Life Insurance Company, F. S. Witherbee is a director of the Equitable Life Assurance Society. Henry Ollesheimer is vice-president of the Metropolitan Bank, New York, F. L. Leland is president of the New York County Bank, and J. C. Cobb resides in Boston. The movement to change the present income bondholders' representation on the board has been under way for a year. A total of $18,000,000 of bonds was voted, of which the so-called Kingsley committee cast $14,000,000 and the so-called Hemphill committee $4,000,000.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—The Railroad Commission of California has rendered a decision authorizing the Oakland, Antioch & Eastern Railway to issue promissory notes of the total face value of $295,345. It is made a condition of the commission's order that these notes shall bear interest at not to exceed 7 per cent per annum.

Rochester Railway & Light Company, Rochester, N. Y.—The Rochester Railway & Light Company has been authorized to issue $250,000 of its 5 per cent fifty-year consolidated trust mortgage bonds for the purpose of refunding a like amount of the underlying bonds of the Brush Electric Light Company, maturing on Jan. 15, 1915. The new bonds are to be sold or exchanged at not less than 95. Should the holders of the underlying bonds not prove willing to exchange for the new bonds at not less than 95, the company has been authorized by the Public Service Commission of the Second District of New York to enter into agreement with such holders whereby an extension of the time for the

payment of the principal may be obtained for one year at an increase from 5 per cent to 6 per cent in interest during that time on the old bonds.

Springfield (Mass.) Street Railway.—The Springfield Street Railway has applied to the Massachusetts Public Service Commission for authority to issue $1,041,000 of additional stock at 110 to pay floating debt. This is part of an issue of $1,290,000 authorized by the stockholders. There is now $3,708,100 of stock outstanding.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—E. W. Clark & Company, Philadelphia, Pa., are offering for subscription $1,118,000 of St. Joseph Railway, Light, Heat & Power Company 6 per cent sinking fund trust stock certificates due on May 30, 1917, and redeemable at par and accrued dividend on any dividend date. The certificates will be issued by the Guaranty Trust Company, New York, as trustee under an agreement with the Cities Service Company. This agreement provides for the deposit with the trustee of 31,948 shares out of a total of 35,000 shares of the common stock of the St. Joseph Railway, Light, Heat & Power Company. A sinking fund will operate monthly to retire certificates before maturity. The rate at which this fund will work will be $450,000 a year, giving the issue an average life of not more than fifteen months. If the certificates are not obtainable for purchase for the sinking fund at par and accrued dividend or better in the open market, they will be called by lot monthly. All certificates taken up in the sinking fund will be cancelled. The certificates are being offered at 97½ and accrued dividend, yielding more than 7 per cent to maturity and more than 8 per cent on their average life.

Toronto (Ont.) Railway.—William A. Read & Company, New York, N. Y., have sold $1,500,000 of 6 per cent gold bonds of the Toronto Railway, dated Dec. 1, 1914, and due half on Dec. 1, 1915, and half on Dec. 1, 1916, at 100¼ for the former and par for the latter. The purchase of these notes by the bankers was noted in the ELECTRIC RAILWAY JOURNAL of Dec. 5.

Washington Railway & Electric Company, Washington, D. C.—Notice has been served on the Washington Railway & Electric Company that because the purchase by the company of 740 shares of stock of the Washington & Rockville Railway was not authorized in writing by the Public Utilities Commission that body recognizes the transaction as void. The purchase was made from the Potomac Electric Power Company for a consideration said to have been $37,000.

West End Street Railway, Boston, Mass.—The Massachusetts Public Service Commission has received an application from the West End Street Railway for authority to sell at public auction the $650,000 of stock authorized by the stockholders on Nov. 24, as noted in the ELECTRIC RAILWAY JOURNAL of Nov. 28.

Wisconsin-Minnesota Light & Power Company, Eau Claire, Wis.—The Railroad Commission of Wisconsin has authorized the Wisconsin-Minnesota Light & Power Company, a subsidiary of the American Public Utilities Company, to issue preferred stock to the amount of $367,000 and common stock to the amount of $244,000. The company has authority to issue $300,000 in preferred and $200,000 in common stock for the purpose of acquiring the property of the Winona Gas, Light & Coke Company, Winona, Minn., the Red Wing, Gas, Light & Power Company, Red Wing, Minn., the Minnesota-Wisconsin Power Corporation, which furnished electric light to Wabasha and Lake City, Minn., and the Eau Claire Gas Light Company. Under this authorization, stock to the amount of $94,000 may be issued for improvements and extensions to the plants, and preferred stock to the amount of $17,000 may be issued to acquire all property including the accounts receivable of the Neillsville (Wis.) Electric Company.

Worcester (Mass.) Consolidated Street Railway.—The Worcester Consolidated Street Railway has applied to the Massachusetts Public Service Commission for authority to issue $1,880,000 of additional stock to pay floating debt. This is part of an issue of $2,350,000 authorized by the stockholders. The amount of stock already outstanding is $5,112,000.

DIVIDENDS DECLARED

Arkansas Valley Railway, Light & Power Company, Pueblo, Col., quarterly, 1¾ per cent, preferred.

Brazilian Traction, Light & Power Company, Toronto, Ont., quarterly, 1½ per cent, preferred.

California Railway & Power Company, San Francisco, Cal., quarterly, 1¾ per cent, prior preferred.

Cleveland (Ohio) Railway, quarterly, 1½ per cent.

Columbus (Ga.) Electric Company, 3 per cent, preferred.

Continental Passenger Railway, Philadelphia, Pa., $3.

Eastern Power & Light Corporation, New York, N. Y., quarterly, 1½ per cent, preferred.

Indianapolis (Ind.) Street Railway, 3 per cent.

Manila Electric Railroad & Light Corporation, Manila, P. I., quarterly, 1¾ per cent.

Union Traction Company, Philadelphia, Pa., $1.50.

United Light & Railways Company, Grand Rapids, Mich., quarterly, 1½ per cent, first preferred quarterly, three-fourths of 1 per cent, second preferred.

United Railways & Electric Company, Baltimore, Md., 2 per cent, preferred.

United Traction & Electric Company, Providence, R. I., quarterly, 1¼ per cent.

West End Street Railway, Boston, Mass., $2, preferred.

ELECTRIC RAILWAY MONTHLY EARNINGS

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, MAINE.

Period		Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Oct.,	'14	$69,422	*$30,533	$38,889	$17,370	$21,519
1 " "	'13	68,454	*27,938	40,516	17,355	23,161
12 " "	'14	773,690	*374,603	404,087	208,880	195,207
12 " "	'13	755,084	*343,270	411,814	207,455	204,359

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

1m., Oct.,	'14	$88,261	*$58,067	$30,194	$28,655	$1,539
1 " "	'13	99,358	*62,447	36,911	25,856	11,055
12 " "	'14	1,108,598	*698,404	410,194	333,135	77,059
12 " "	'13	1,194,265	*709,875	484,390	292,536	191,854

CLEVELAND, SOUTHWESTERN & COLUMBUS RAILWAY, CLEVELAND, OHIO.

1m., Oct.,	'14	$107,611	*$65,850	$41,760	$32,464	$9,296
1 " "	'13	111,955	*65,988	45,967	32,341	13,626
10 " "	'14	1,058,200	*633,485	424,716	323,776	100,940
10 " "	'13	1,051,382	*627,872	423,509	316,785	106,724

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO.

1m., Oct.,	'14	$262,685	*$146,703	$115,982	$42,349	$73,633

LEHIGH VALLEY TRANSIT COMPANY, ALLENTOWN, PA.

1m., Oct.,	'14	$164,692	$76,613	$88,078	$70,182	$17,896
1 " "	'13	145,647	74,303	71,344	47,012	24,332
12 " "	'14	1,832,293	901,171	981,123	712,902	268,221
12 " "	'13	1,758,651	872,587	886,064	552,087	333,977

MEXICO (MEX.) TRAMWAY.

1m., Oct.,	'14	$306,772	$140,342	$164,430	.....	.....
1 " "	'13	278,377	151,935	126,443	.....	.....
10 " "	'14	2,854,705	1,327,634	1,527,072	.....	.....
10 " "	'13	3,024,232	1,541,267	1,482,970	.....	.....

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

1m., Oct.,	'14	$191,814	*$108,204	$83,610	$41,921	$41,689
1 " "	'13	204,178	*122,797	81,381	39,827	41,554
12 " "	'14	2,246,484	*1,354,798	891,686	506,449	385,237
12 " "	'13	2,189,888	*1,306,019	883,869	458,467	425,402

PORTLAND (MAINE) RAILROAD.

1m., Oct.,	'14	$87,095	*$53,623	$33,472	$19,193	$14,279
1 " "	'13	82,620	*52,081	30,539	21,711	8,828
12 " "	'14	1,042,698	*643,206	399,492	254,031	145,461
12 " "	'13	1,034,100	*705,997	328,103	156,193	171,910

REPUBLIC RAILWAY & LIGHT COMPANY, NEW YORK, N. Y.

1m., Oct.,	'14	$253,134	*$155,996	$97,138	$83,809	$13,329
1 " "	'13	257,303	*159,280	98,023	86,157	11,866
12 " "	'14	3,074,120	*1,854,458	1,219,663	1,003,677	215,676
12 " "	'13	2,964,266	*1,839,447	1,124,819	994,768	130,051

TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.

1m., Oct.,	'14	$800,097	$392,372	$407,725	$231,438	$178,287
1 " "	'13	765,160	375,156	390,004	238,135	151,869
10 " "	'14	7,746,727	3,995,604	3,751,123	2,278,509	1,472,504
10 " "	'13	7,333,922	3,711,374	3,622,548	2,349,531	1,273,017

*Includes taxes.

Traffic and Transportation

AUTO BUS COMPETITION IN SOUTHERN CALIFORNIA

Auto Bus Invades San Francisco—Los Angeles Railway, Losing $600 a Day, Has Withdrawn Twenty-One Cars

The "jitney" bus, as the nickel-a-passenger automobile is popularly referred to in southern California cities, has invaded San Francisco. On Dec. 1 six automobiles were put in regular service on Market Street, carrying passengers between the ferry and outlying points for 5-cent fares. As yet no special license has been placed upon these vehicles in San Francisco, but the fact that in that city they will be in competition with a municipal street railway may present the matter in a new light. While an increase in local passenger capacity during the exposition would be welcomed it is conceded that enfranchised street railways should not be deprived of their most profitable traffic by companies free from any obligation to serve in unprofitable districts and that automobiles should be subject to regulation, including a guarantee for damages in case of accident.

Long Beach, Cal., recently imposed a license fee of $25 a year on the "jitney" buses, compels the taking out of a $10,000 liability insurance for every car engaged in transporting passengers, and requires the buses to operate over designated routes and maintain reasonable schedules. On the day that this ordinance went into effect only forty-one out of 130 automobiles carrying passengers in competition with the street cars were continued in service. Prior to the passage of this ordinance in Long Beach the Pacific Electric Railway threatened to discontinue its East Ocean Avenue line altogether unless some regulation was placed upon the 5-cent automobile. Legislation is still pending on the matter in Los Angeles. According to the Los Angeles Railway Corporation its loss in revenue on account of the automobile competition amounts to $600 a day, and has caused the company to withdraw twenty-one cars on six lines and eighty-four motormen and conductors. Up to Dec. 1 the secretary of the Los Angeles police commission had issued a total of 1520 permits to chauffeurs to operate auto buses in competition with street cars, and that the rate of increase is rapid is shown by the record of over sixty additional permits issued on Dec. 2.

So serious has the auto bus matter become in Los Angeles that on Dec. 4 the directors of the local association of merchants and manufacturers addressed a letter in part as follows to the City Council:

"We believe that the time has arrived when your honorable body should take some action regulating the passenger traffic of the 5-cent automobile buses. If these buses can run through the city without proper regulation and protection to the lives of not only patrons but the public in general, we will soon be confronted with a number of accidents. In addition, with several hundred of these buses running up and down the main streets the traffic congestion is greatly increased, and the progress of other machines correspondingly retarded. To allow these machines unrestricted freedom is a menace to the entire community, and we believe that no good reason exists why they should not be placed under strict traffic regulations, and we therefore request that this matter receive the early attention of your honorable body."

NEW COMPANY PUBLICATION

The Hudson & Manhattan Railroad, which operates under the Hudson River between New York and New Jersey, has begun the publication of the *H. & M. Review*. The first issue, dated December, contains eight pages, 6 in. x 9 in. in size. In an article entitled "Object and Future of the *H. & M. Review*," Wilbur C. Fisk, president of the company, says in part:

"The need has been felt for months back for a means of intercommunication between all of us who are employed by the company and also between the departments to which we may be assigned. To accomplish this end, it has finally been decided to issue the *H. & M. Review*.

"The prime purpose to be achieved by the publication is the further promotion and cementation of the good fellowship already existing among the employees of the company. This can only be achieved by the hearty cooperation of all and by keeping the editor posted on all news items which are entitled to publication. The editor will always welcome contributions, but will not publish anything not prompted by the best of motives.

"It must not be forgotten that at times the company and your president may have a message which is meant for all of you, and the columns of the *Review* will be open to any officer of the company who has a message, either for the men of his own department, or which he believes will be beneficial to all. It is needless to say that events occurring during any one month will be faithfully reported in the paper.

"I earnestly request not only the officers but all employees of the company to lend the editor their assistance in his efforts to make the *Review* of real value."

The editor of the *H. & M. Review* is J. J. Scovern.

INTERURBAN SAFETY

The Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, of which E. F. Schneider is general manager, is continuing unabated its campaign of safety begun more than five years ago. The custom of the company has been to cover each year the entire system of 250 miles with talks to the 63,000 school children in the territory contiguous to the company's lines. Ben B. Casson of the company in a talk which he delivered recently to the grammar and primary grade pupils at the German Lutheran Parochial School at Elyria, Ohio, reviewed the activity of the company along these lines. In addressing the grammar grade pupils he said that in the year prior to the inauguration of the safety movement eleven children were injured and three killed, but that since then not a child had been injured or killed while going to or from school. He impressed the children with the necessity of exercising care not only as regards street cars but also as regards automobiles, motorcycles, wagons, bicycles and steam railroads. He emphasized the sad task which confronts the officers of the company in going into the homes of parents of children who had been injured or killed and witnessing the grief in the household. Mr. Casson also reviewed his own experiences during the four years that he operated a car over the Cleveland, Southwestern & Columbus Railway. The great problem before the American people to-day was the preservation of the lives of the people. He advised the school children to discuss safety among themselves and suggested similar discussions in the homes. The address to pupils of the primary grade was, of course, a modification of the one made to the grammar grade pupils. Heretofore the safety addresses to the school children have been made by officers of the company. Mr. Casson is a motorman, and his talks have presented a different viewpoint, and possibly for this reason have been especially valuable.

COMPLYING WITH THE NEW REVENUE PROVISION

A circular letter sent out several days before Dec. 1 to the regular shippers over the Louisville & Interurban Railroad, and a supply of stamps laid in by R. H. Wyatt, general freight and passenger agent of the company, enabled that company to start out under the new revenue tax on the first of the month without confusion. The circular letter reviewed briefly the nature and purposes of the revenue measure, explained what were the duties of the shippers, and then added that for the convenience of the patrons of the Louisville & Interurban Railroad stamps had been supplied to all conductors on freight trains, to agents of the company wherever stations were maintained and that the company would gladly obtain for shippers such supplies of stamps as they needed for use in shipments over its lines. As a consequence every shipper knew beforehand just what was expected of him, as, in addition, copies of the letters which were sent out were posted prominently at every shipping point. The company will continue, while the law is in effect, to have conductors and the various freight offices handle stamps for use of the shippers. Since postmasters are not paid for handling the stamps many of them are refusing to do so. The service which the company has installed in regard to stamps also enables the company to keep its records free from charge accounts of numerous shippers with small entries relating to the stamps.

Lifting Jacks in Pennsylvania.—The Lehigh Valley Transit Company, Allentown, Pa., has equipped all of its cars with lifting jacks conforming with the Pennsylvania statute effective on Dec. 1. The jacks are slung on special hang-

ers from the sides of the cars, and special instructions have been issued to the employees on the handling of the jacks in case of personal injury or derailment.

Increase in Fares in Eastern New Jersey.—The proposed increase in fares between Atlantic City and Pleasantville, N. J., referred to in the ELECTRIC RAILWAY JOURNAL of Dec. 5, page 1274, does not apply to the Atlantic City & Shore Railroad. The steam roads operating between the points mentioned plan, however, to put a higher rate of fare into effect on Dec. 15.

Serious Accident on New York Elevated.—In a rear-end collision between two northbound trains on the Ninth Avenue line of the Manhattan Elevated Railway in New York at 116th Street and Eighth Avenue at 6:30 p. m. on Dec. 9, two men were crushed and received burns from which they died, and more than a score of others were injured in the panic which ensued.

Vermont Fare Matter.—The Barre & Montpelier Traction & Power Company, Montpelier, Vt., has filed with the Public Service Commission of that State a proposed tariff increasing the fare over the line between the cities from 10 cents to 15 cents. The Supreme Court of the State recently held that the company was required to maintain a fare not to exceed 5 cents within the limits of each of the cities in which it operates.

Commutation Fare Order.—The Public Service Commission of Missouri on Dec. 7 issued an order to the Kansas City, Clay County & St. Joseph Railroad to begin on Jan. 1, 1915, issuing commutation tickets on definite rate schedules established by the commission, which figure out at about 1.1 cents per mile. Five days from the receipt of the order are allowed for an answer, which will carry until Dec. 14. A request for a rehearing is to be filed.

Car Advertising in Toronto.—Despite the objection of Works Commissioner Harris the Board of Control of Toronto, Ont., has decided to permit street car advertising in the cars on the city's own line. Last spring the commissioner reported against the proposal and it was dropped for the time being. It has been recommended that the contract be awarded to the Canadian Street Car Advertising Company.

Time-Table Prize.—The offer of a $25 prize for the best time-table to be submitted by one of its trainmen, which was published in the September number of the *United Railroads Magazine*, published by the United Railroads, San Francisco, Cal., aroused considerable interest and resulted in five time-tables being submitted by four contestants, one of whom submitted two tables. The prize was awarded to D. W. Sutlief, a conductor in the Twenty-eighth Street carhouse.

Far-Side Stops at Rock Island.—The City Council of Rock Island, Ill., insists that the Tri-City Railway discontinue the near-side stop and adopt the far-side stop. A plan to stop on the far side was suggested by John G. Huntoon, the general manager of the company, a year ago, but the people of Davenport did not favor the change and the matter was dropped. Now the cities of Rock Island and Moline are insisting on the far-side stop, irrespective of the attitude of the city of Davenport toward the proposal.

Company Relations in Galveston.—For many years the Galveston (Tex.) Electric Company has required a deposit of $30 from each of its trainmen as an assurance of good faith. A new policy, however, is now being put into effect. The deposits are being returned to the trainmen and 6 per cent interest is being paid each man for the time the money has been on deposit. The records for most of the deposits date back no further than 1900. Under the new plan the company has its trainmen under bond, the company itself paying the premium.

Market Transfers.—The Edmonton (Alberta) Radial Railway has adopted a special "market transfer," in order to promote business at the newly-opened civic market. Passengers going direct to the market, on market days, receive a "market transfer," which enables them to make the return trip on a single fare. J. H. Larmouth, superintendent of the railway, a municipal line, is reported to have expressed the opinion to the civic authorities that a portion of the cost of the transfer should be borne by the market committee of the City Council.

Transfer Changes in Savannah.—With a view to giving additional transfer privileges to its patrons, the Savannah (Ga.) Electric Company put into effect on Dec. 1 certain changes in its transfer system. Several important transfer points have been relocated and the system of issuing transfers as regards these points has been changed. The company asked the co-operation of its patrons in inaugurating the changes and announced that misunderstanding regarding the changes would be explained over the telephone or in person at the company's office.

Police in Safety Campaign.—The city of Montreal, Que., has decided to co-operate with the Montreal Tramways in the "safety first" campaign inaugurated by A. Gaboury, superintendent of the company. The chief of police is to work with Mr. Gaboury, and later a committee of civic officials is to be formed to study the entire question as it relates to Montreal. The chief of police has sent out thousands of circulars to owners of vehicles referring to the urgency of observing traffic regulations and making suggestions as to how to avoid accidents.

Height of Steps in New Hampshire.—The Public Service Commission of New Hampshire held a hearing in Concord on Dec. 1 to determine whether steps on the electric cars in the State are reasonably safe and low. Various estimates of the cost of changing the height of steps were made. They ranged from $30 to $150 a car, according to the rolling stock operated. All of the roads were represented except the Concord & Manchester Electric Branch of the Boston & Maine Railroad, which has already complied with an order of the commission in regard to steps.

Operating Changes in Vancouver.—Several of the city lines of the British Columbia Electric Railway in Vancouver, B. C., have been rerouted in order to provide greater economy of operation and still meet existing traffic conditions. The general plan affects the service on stub lines slightly. The company's owl service is also being operated in closer accordance with traffic requirements. The trainmen have made an arrangement among themselves providing for a certain lay-off each week in order to enable a larger force to be kept on than would otherwise be possible.

"Safety First" in St. Louis.—Bruce Cameron, superintendent of transportation of the United Railways, St. Louis, Mo., is quoted as follows in regard to the "safety first" campaign of the company: "I believe when the public has been impressed fully with the necessity for caution, we will find the number of persons injured in street car accidents far less than heretofore. There seems to be a general disposition to heed the warning of our signs. If wagon drivers will obey the traffic laws and pedestrians cross the streets only at street corners, instead of in the middle of the block, we will have few accidents."

Not Within Commission Jurisdiction.—Chairman McCall of the Public Service Commission for the First District of New York replied on Dec. 9 to Health Commissioner Goldwater of New York, who had written to the commissioner calling attention to alleged unsanitary conditions on the transit lines due to overcrowding. Mr. McCall pointed out that breathing, coughing and sneezing by persons in the cars were not matters subject to the jurisdiction of the Public Service Commission, and referred to the expenditure of $325,000,000 now being made for rapid transit lines intended to relieve the congestion of which Dr. Goldwater complained. There has been considerable other gentle persiflage in this connection recently.

Hunters Beware.—An appeal to hunters to be careful in handling firearms while on street cars has been made by the Detroit (Mich.) United Lines based upon a bulletin to conductors issued by the operating department. The bulletin follows: "Attention is called to the matter of firearms, particularly guns used for hunting purposes, carried by passengers. If at any time a passenger is examining a firearm, or handling it carelessly, or in such a way that it might imperil the lives of other passengers, caution him to desist and explain that this is a rule of the company for the protection of passengers. Also, so far as a conductor is able to do so, he must see that firearms carried by passengers are not loaded."

Passengers Carried in Greater New York.—The number of passengers using the transit systems of Greater New York for the year ending June 30, according to tables compiled by the Public Service Commission of the First District of New York, was 1,813,204,692, an increase over the previous twelve months of 43,328,184. They paid out in fares $89,361,262. The number of passengers carried by the Brooklyn Heights Railroad, the principal surface railway subsidiary of the Brooklyn Rapid Transit Company, fell off by 1,140,585, by the New York Railways by 1,742,267. The Second Avenue Railroad carried 858,189 fewer passengers than the year before, the Third Avenue 75,039, the Forty-second Street, Manhattanville & St. Nicholas Company lost 175,443, and the Dry Dock, East Broadway & Battery Company 1,297,743 passengers.

Chicago Drafts Electric Railway Freight Ordinance.—In an effort to further the recommendations of the Chicago Municipal Markets Commission relative to the advantage of permitting all the electric railways which enter Chicago to handle freight, an ordinance granting this privilege is being prepared. At a preliminary conference between a sub-committee of the Chicago City Council's local transportation committee, the officials of the surface and elevated lines, representatives of the city law department and the Chicago Municipal Markets' Commission, the preliminaries were arranged. According to the city legal department there was nothing to hinder the electric lines from carrying freight within the corporate limits. Upon being questioned regarding their attitude toward a proposition including the right to carry freight, the representatives of the surface and elevated lines expressed a willingness to co-operate in the matter.

Ten Months of Safety in Detroit.—W. C. Cann, chairman of the general safety board of the Detroit (Mich.) United Railway, reports that during the first ten months of this year more than 900 safety suggestions were submitted to the division and general safety board and that favorable action has been secured on 95 per cent of the suggestions. So far this year the number of cars in collision has decreased 47.7 per cent, derailments 7.7 per cent, running over crossings 30 per cent, and passengers hurt in boarding and alighting 32 per cent. The only reports showing any appreciable increase are those covering automobiles struck. These have increased 30.9 per cent. Mr. Cann expresses the opinion that the showing which the company had made in decreasing all accidents other than those in which automobiles are involved indicates that the burden of responsibility for the increase of automobile accidents is on the automobile driver and not on the men operating the street cars.

New Traffic Ordinance in Canton.—A new traffic ordinance was passed by the City Council of Canton, Ohio, on Nov. 9. It is provided that automobiles and horse-drawn vehicles shall cross the center of the intersecting street before turning into it rather than follow a diagonal course from one street into the other. No person under sixteen years of age shall be allowed to operate a motorcycle or automobile on the streets of the city. There are strict regulations with regard to automobiles being allowed to stand along the curb in the business district. A rate of speed exceeding 15 m.p.h. is to be taken as evidence of careless driving, and a rate of speed exceeding 20 m.p.h. is prohibited. Drivers of vehicles passing a street car stopping to discharge or to take on passengers, when said vehicle is going in a direction opposite to that from which the street car is moving, shall slow down and exercise due care so as not to endanger the safety of pedestrians. The driver of every vehicle approaching a street car stopping for the purpose of taking on or discharging passengers shall give some signal plainly visible or audible to such passengers, and shall keep such vehicle at least 6 ft. from the running board or lower step of such car. If it is not possible to preserve such distance from such running board or lower step, the driver or operator shall stop until the street car has again started. All vehicles upon a track in front of a street car shall turn out upon the near approach of the car. The penalty for violating the traffic ordinance is a fine not to exceed $100 and costs. In the section regulating the movement of pedestrians, it is provided that pedestrians shall have the right-of-way over drivers of vehicles at street crossings only.

Personal Mention

Sir George S. Gibb, chairman of the Metropolitan District Railway, London, has been appointed a civil member of the Army Council and will be charged with the supervision of army contracts.

Mr. J. M. Tomlinson, acting vice-president and general auditor of the New York, New Haven & Hartford Railroad since the retirement of Mr. H. M. Kochorsperger, vice-president, has been elected vice-president and comptroller of the company.

Mr. A. Mackrille, assistant general auditor, has been appointed general auditor of the New York, New Haven & Hartford Railroad with office at New Haven, and Mr. T. M. Prentice, assistant auditor, has been appointed auditor of the company with office at New Haven.

Mr. C. C. Collins has resigned as traffic manager of the Lehigh Valley Transit Company, Allentown, Pa., effective on Jan. 1, 1915. Before becoming connected with the Lehigh Valley Transit Company Mr. Collins was traffic manager of the Western Ohio Railroad, Lima, Ohio.

Lieutenant-Colonel G. S. Rennie, M.D., surgeon in chief of the Dominion Power & Transmission Company, Hamilton, Ont., and the Toronto, Hamilton & Buffalo Railway, will be in command of one of the field artillery batteries being mobilized in Toronto for overseas service.

Mr. Daniel L. Turner, deputy engineer of subway construction of the Public Service Commission of the First District of New York, has been appointed to serve on the advisory commission on city planning, which is to assist and co-operate with the committee on city plan of the Board of Estimate, New York City.

Mr. A. E. Beck, one of the permanent counsel of the British Columbia Electric Railway, Vancouver, B. C., and its claim agent, will leave the company's service at the end of the year to practice law on his own account in Vancouver. The company's legal and claims departments will be consolidated under the control of the other permanent counsel, Mr. V. Laursen.

Mr. C. H. Christensen has been appointed manager of the Missoula (Mont.) Street Railway, the Missoula Light & Water Company and the Clark Missoula Power Company, to succeed Mr. George R. Brown, deceased. Mr. Christensen has been connected with the Missoula Light & Power Company in various capacities for twenty years. During the last four years he held the position of superintendent of the Missoula Light & Water Company's Bitter-Root Valley System.

Mr. W. O. Demoss, who has been appointed master mechanic of the Wilmington & Philadelphia Traction Company, Wilmington, Del., and the Southern Pennsylvania Traction Company, was for ten years foreman of the West Baltimore Street and the Retreat Street carhouses of the United Railways & Electric Company, Baltimore, Md. On Feb. 27, 1911, he became maintenance foreman of the Delaware Avenue carhouse of the Wilmington & Philadelphia Traction Company and in March, 1912, was appointed general foreman of the Wilmington shops of the latter company.

Mr. John W. Graham, Twin Falls, Idaho, will fill the vacancy left on the Idaho Public Utilities Commission by the recent resignation of Judge D. W. Standrod. Mr. Graham has been practicing law in Idaho for the last four years. He is forty-one years of age and a native of Canada, but was educated at the University of Nebraska. He practiced his profession in Fremont, Dodge County, Neb., and was for four years prosecuting attorney of that county, and had altogether fifteen years' experience as a lawyer. The appointment which he has just accepted will hold until January, 1919.

Mr. H. R. LaMontagne has been appointed general agent of the express department of the Worcester (Mass.) Consolidated Street Railway to succeed Mr. F. E. Wood, whose appointment to the Cumberland County Power & Light Company, Portland, Maine, is referred to elsewhere in this column. Mr. LaMontagne entered the service of the passenger department of the Worcester Consolidated Street

Railway after graduation from a technical school. Later he became connected with the freight department, finally being made traveling auditor, from which position he was appointed to succeed Mr. Wood.

Mr. M. H. Bronsdon, chief engineer of the Rhode Island Company, Providence, R. I., from March, 1907, until August, 1912, has returned to that post, succeeding Mr. William Pestell, who recently resigned to accept a position with the B. F. Sturtevant Company of Boston, at Chicago. Mr. Bronsdon has been doing general engineering work in San Francisco since leaving Providence. Mr. Bronsdon was born in San Francisco and he had his first experience in engineering construction on a cable road in Los Angeles. In 1889 he became superintendent of the Providence Cable Tramway. He later was chief engineer at the Eddy Street power plant in Providence, having charge of the installation there. He later went to Duluth as designing and construction engineer of the Duluth-Superior Traction Company, and was afterward appointed engineer for the Old Colony Street Railway, Boston, Mass. His next engagement was with the United Railroads, San Francisco, where he remained until March, 1907, when he succeeded Mr. Fred N. Bushnell as chief engineer of the Rhode Island Company.

Mr. M. A. Tatum, who was appointed superintendent of the southern division of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, recently, began his career in electric railway work in the express and freight department of the Eastern Ohio Traction Company in 1905. In 1906 he resigned this position to enter the engineering department of the Roberts & Abbott Company, Cleveland. About a year later he accepted a position with the Washington, Baltimore & Annapolis Railroad as clerk to Mr. W. E. Slaughter, the superintendent. After the electrification of the road and the completion of the main line between Washington and Baltimore in 1908, Mr. Tatum was appointed clerk to Mr. Joseph O'Hara, superintendent of transportation. During 1909 he was employed in the carhouses and substations of the company, and in 1910 he was made inspector at Washington. During 1911 and 1912 he occupied the position of trainmaster and in 1913 he became general passenger and freight agent of the road. He resigned from the company in September to become connected with the Cleveland, Southwestern & Columbus Railway.

Mr. F. E. Wood has been appointed general freight agent of the Cumberland County Power & Light Company, Portland, Maine, operating the Portland Railroad and the Lewiston, Augusta & Waterville Street Railway. Mr. Wood entered the service of the Springfield (Mass.) Street Railway in 1909 and worked in the repair shop and the pit. Subsequently he entered the express department as general clerk and spare messenger. In February, 1910, on the opening of the express service on the Interstate Consolidated Street Railway operating through Attleboro and North Attleboro, Mass., to Providence, R. I., over the Rhode Island Company's line, Mr. Wood accepted the position of agent at Attleboro in charge of that division. This express service was later extended over the Milford, Attleboro & Woonsocket Street Railway, operating through Franklin and Milford, Mass. In March, 1912, he was transferred to Worcester, Mass. Express service was established on the Worcester Consolidated Street Railway in December, 1912, and in 1913 Mr. Wood was appointed general agent of the Worcester Consolidated Street Railway with headquarters at Worcester and jurisdiction over all the lines previously mentioned, together with the Springfield Street Railway. He resigned from the Worcester Consolidated Street Railway on Nov. 28, 1914, to become connected with the Cumberland County Power & Light Company. Before Mr. Wood left Worcester a banquet was tendered to him at the Hotel Bancroft, that city, by his fellow employees and he was presented with a watch fob by them as a token of their esteem.

OBITUARY

Morris G. Condon, president of H. B. Underwood & Company, Philadelphia, Pa., machinists and engineers, who was shot by an intruder in his room in the Hotel Adelphia in that city on Nov. 25, died from the effects of his wound.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

***Edmonton Northwestern Radial Railway, Edmonton, Alta.**—Application for a charter has been made by this company in Alberta to build an interurban electric railway from Edmonton northwest to the Pembina River. Messrs. Short, Woods, Bigger & Collison, 14 Howard Avenue, Edmonton, are said to be interested in the project.

***Albion, Charlotte & Northern Railway, Lansing, Mich.**—Chartered in Michigan to build a 53-mile electric railway. Capital stock, $100,000.

***Shelby (N. C.) Northern Railway.**—Chartered in North Carolina to build an electric or steam railway from Shelby to Casar, via Beams, Mills, Fallston, Belwood, Boggs and Warlicks. Capital stock, $400,000. Incorporators: S. S. Royster, Shelby, president, and L. M. Elam, Shelby, secretary and treasurer.

FRANCHISES

Calgary, Alta.—The Chestermere & Calgary Suburban Railway has received an extension of time on its franchise for the completion of its line in Calgary.

Vallejo, Cal.—A. D. Bowen, representing the Benicia Land & Terminal Company, will ask the Council for a franchise to build an electric railway in Vallejo. This is part of a plan to build an electric line to connect Benicia and Vallejo. [E. R. J., Oct. 24, '14.]

Tarpon Springs, Fla.—James H. Murphy, St. Petersburg, has asked the Council for a franchise in Tarpon Springs.

Macon, Ga.—The Macon Railway & Light Company has asked the Council for an extension of time on its franchise in which to remove its tracks from the south side of Tattnall Square Park to the center of College Street in Macon.

***Lewiston, Idaho.**—The State Highway Board has voted approval of a franchise to A. G. Nortz, Lewiston, to build an electric railway across interstate Lewiston-Clarkston bridge.

St. Peter, Minn.—The Electric Short Line Railroad has accepted the forty-nine-year franchise granted it by the Council in October for the use of so much of the levee as lies east of Front Street, between Chestnut Street and Park Row Street, and also to build a line along the entire length of Front Street to the north city limits of St. Peter.

Lockport, N. Y.—The Niagara River & Eastern Railroad had asked the Council for a franchise to use certain streets in the east and south of Lockport to build a line to connect the Buffalo, Lockport & Rochester Railway and the International Railway lines with a new line into Niagara Falls. [E. R. J., Oct. 17, '14.]

Youngstown, Ohio.—The Mahoning & Shenango Railway & Light Company has asked the Council for a franchise to extend its Mahoning Avenue line to Perkins Corners in Youngstown.

Cincinnati, Ohio.—The Street Railway Committee of the Cincinnati City Council has recommended the ordinance granting a twenty-five-year franchise to the Cincinnati, Newport & Covington Railway to be advanced to a second reading, following which a public hearing will be called to discuss its merits.

Cleveland, Ohio.—Mayor Baker of Cleveland has signed the amended franchise granted by the Council to the Cleveland & Youngstown Railroad to make certain necessary changes in its grade. [E. R. J., Oct. 5, '14.]

Findlay, Ohio.—The City Council of Findlay has before it ordinances giving the Toledo, Bowling Green & Southern Railway a twenty-five-year franchise on its streets and also a franchise for furnishing current for light and power purposes. They provide that the company shall pay to the city 2 per cent of the gross receipts from the business.

Guelph, Ont.—The Board of Railway Commissioners has authorized the Guelph Radial Railway to construct an inter-

change track with the Grand Trunk Railway on Suffolk Street, Guelph.

Medford, Ore.—S. Bullis, of the Southern Oregon Electric Railway Company, has asked the City Council and the Southern Pacific Railway Company for permission to cross the tracks of the Southern Pacific on Main Avenue. In case the Southern Pacific refuses to grant the request for crossing rights, the application will be presented to the State Railway Commission for final settlement. An extension of not less than 3500 ft. will be made as soon as the preliminary details are settled.

Philadelphia, Pa.—Peter E. Costello, Philadelphia, has received a franchise from the Council for a two-track elevated railway from Front Street and Arch Street to Rhawn Street, Holmesburg.

Montreal, Que.—The Montreal & Southern Counties Railway has received an extension of time on its franchise in which to complete its lines in Montreal.

Beaumont, Tex.—A petition was presented to the City Council asking that the Council take steps to induce the extension of the Beaumont Traction Company's line to the Magnolia Petroleum Company's refinery south of Beaumont.

Seattle, Wash.—The Puget Sound Traction, Light & Power Company in Seattle will not be allowed to change the terminus of its Yesler Way cable line from its present location, between First and Second Avenues, as it had petitioned, according to a decision rendered by the City Council franchise committee. The company argued that the operation of its cable cars over Second Avenue hindered the headway of its cars north and south on the arterial highway.

TRACK AND ROADWAY

Lacombe & Blindman Valley Electric Railway, Lacombe, Alta.—W. L. McKinnon & Company, Toronto, advertised recently inviting bids for $206,700 of this company's first mortgage bonds, maturing in 1943. The Alberta government has guaranteed the principal and interest of the bonds for $7,000 a mile, or $273,700 for 39.1 miles. They bear 5 per cent interest.

Argenta (Ark.) Railway.—Work on the extension from Washington Avenue and Hazel Street to Rock Island station, at Fourth Street and Beech Street in Argenta, has been begun.

Central California Traction Company, San Francisco, Cal.—Negotiations are pending by which portions of the city lines of this company will be abandoned and a universal transfer privilege established between this company's line and the lines of the Stockton Electric Railway.

San Francisco (Cal.) Municipal Railway.—Bids for another branch of this railway are being considered by the Works Board, which has received the offers to construct the California-Street municipal railway line and the Seventeenth-Street carhouse. The line will begin at Geary Street and Second Avenue and run over Second Avenue, Cornwall and California Streets to Thirty-third Avenue.

Marin County Electric Railway, San Francisco, Cal.—This company has received permission from the Railroad Commission of California to construct a line in Sausalito, Cal., on the condition that the present franchise shall be amended so as to give the municipality the right to purchase the system after five years. The company is granted authority to issue 185½ shares of capital stock at par, and it is provided that this stock shall be sold only to property owners and residents of Marin County. It is also provided that all moneys obtained from the sale of stock shall be deposited by the railway company in Marin County banks as trust funds, with the understanding that if a total sum of $18,550 is not deposited within six months, these moneys shall be repaid to subscribers. [E. R. J., Nov. 21, '14.]

Connecticut Company, New Haven, Conn.—Plans are being made by this company to extend its tracks along Railroad Avenue to the station in Westport.

***Havana, Cuba.**—Work has been begun on an electric line between Havana and Guanabacoa in Cuba.

Central Illinois Traction Company, Paris, Ill.—An extension between Charleston and Paris, 30 miles, will be constructed by this company during 1915.

Indianapolis Traction & Terminal Company, Indianapolis, Ind.—This company will complete the construction of the Minnesota Street line, between Shelby Street and Churchman Avenue, for operation before Dec. 24. The special work at the corner of Shelby and Minnesota Streets will be completed sixty days fater the opening of the new year.

Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan.—This company has completed the survey and secured the right-of-way for the second section of the projected interurban railway between Kansas City and Topeka, Kan. The first section, from Kansas City to Bonner Springs, is now in operation and its business has considerably exceeded expectations. The second section is 21 miles from Bonner Springs to Lawrence. It probably will be in operation within a year. The third section, Lawrence to Topeka, will be built after the second section is in successful operation. Bids for the construction of the Bonner Springs-Lawrence section will probably be asked shortly. On the first section the company advertised for bids, but did with its own forces work for which it considered the bids unreasonable. The construction work which it is planned to start soon involves a bridge over the Kaw River at Lawrence. Carl G. Klemm, 1010 Commerce Building, is secretary of the company.

Kentucky Utilities Company, Somerset, Ky.—With this company disposing of $3,000,000 worth of bonds for needed improvements it is rumored that a part of the company's plans is to extend its line to Burnside, 7 miles south of Somerset, on the Cumberland River.

Winnipeg (Man.) Electric Railway.—Plans are being prepared for filing an application with the City Council for extensions in the northwest section of Winnipeg, in accordance with the City Engineer's directions.

Boston (Mass.) Elevated Railway.—This company is asked to consider plans to construct tracks on Pleasant Street, from the mouth of the subway to Washington Street in Boston.

Fitchburg & Leominster Street Railway, Fitchburg, Mass.—Surveys, which have been in progress for the extension of this railway to Townsend, have been suspended until spring. This line will ultimately be extended to Nashua, N. H.

Michigan Railway, Jackson, Mich.—This company has placed in operation its line between Kalamazoo and Monteith.

International Transit Company, Buffalo, N. Y.—The Board of Railway Commissioners has authorized the building of a bridge at Tagona, Sault Ste. Marie, Ont., to carry a highway and this company's tracks across the Algoma Central & Hudson Bay Railway. The cost of the bridge is to be borne by the electric railway company.

Cincinnati (Ohio) Traction Company.—A new crosstown line north of the present route on McMillan Street in Cincinnati is being considered by this company and may be built in the near future.

Ardmore & Western Interurban Railway, Ardmore, Okla.—As soon as negotiations are completed work will be begun by this company on the 100-mile line to connect Springer, Woodford, Poolville, Elmore City and Leon. Capital stock, authorized, $300,000. Bonds, authorized, $2,500,000. Officers: A. F. Costigan, Guaranty Bank Building, Ardmore, president; D. E. Allen, Ardmore, vice-president; A. L. Adath, Ardmore, secretary, and T. C. Bridgeman, treasurer. [E. R. J., May 30, '14.]

Forest Hill Electric Railway, Toronto, Ont.—The roadbed is now being prepared for this railway. Work has been begun at Bathurst Street, and the first stage from there to Dufferin Street will be proceeded with as rapidly as possible. The tracks will be laid on their entire route beginning near St. Clair Avenue. T. J. Glover is interested in this projected railway. [E. R. J., April 11, '14.]

Ottawa & St. Lawrence Electric Railway, Ottawa, Ont.—A contract has been awarded to Eastman, Kenny & Stearns, Russell, Ont., for grading about 6 miles of the projected line. About 2 miles of grading has been completed, and it is expected to have about 8 miles between Russell and Metcalfe completed and ready for the rails within the next three weeks. H. W. Pearson, Confederation Life Building, Toronto, Ont., secretary.

Toronto (Ont.) Civic Car Lines.—A by-law will be submitted to the ratepayers on Jan. 1, 1915, to provide for $455,000 for the extension of the civic car lines in Toronto.

Toronto, Ont.—City Solicitor Johnston advised the Board of Control on Nov. 27 it would be necessary to submit separate by-laws for each of the proposed new electric lines, consequently the board changed its recommendations. The Council will be asked to authorize the submission of a by-law for $105,000 for the proposed Lansdowne Avenue line, $317,000 for the North Toronto line, and $52,000 for the taking over of that portion of the Toronto & York Radial Railway Company's line within the city limits in the east end.

Electric Short Line Railroad, Minneapolis, Minn.—Plans are being considered by this company and the members of the Winthrop Commercial Club to build an electric railway through Winthrop and north as far as Winsted and south through Sleepy Eye to Jackson.

St. Louis, Mo.—The residents of South Lindenwood have submitted a petition to the Missouri Public Service Commission asking the United Railways for an extension of the Tower Grove line. The Tower Grove line terminus is 2½ miles away from the city limits in the Gratiot and Lindenwood section of the city.

Niobrara, Sioux City & Omaha Railway, Omaha, Neb.—Surveys have been completed by this company between Madison and Elgin. Right-of-way has been secured between Omaha and Norfolk via Madison. The Elgin line will be a branch proposition. Charles W. Baker, Omaha, is interested. [E. R. J., April 4, '14.]

Corry & Columbus Street Railway, Corry, Pa.—A 30-mile line from Corry, Pa., to Maysville, N. Y., via Columbus, Pa., Clymer and Sherman will be built by this company during 1915.

Slate Belt Electric Street Railway, Penn Argyl, Pa.—A 5-mile line between Wind Gap and Saylors Lake, Pa., will be constructed by this company during 1915.

***San Antonio, Tex.**—James L. Himrod, Thomas Moore, Austin, and others are making plans to build an electric railway to connect New Mexico, Lamesa, Robert Lee, San Angelo, Ballinger, San Antonio and other points with a port on the Gulf of Mexico.

Pittsburgh, Harmony, Butler & Newcastle Railway, Pittsburgh, Pa.—Within a few weeks this company will have completed its 6½ mile line between Evans City and Beaver Falls. In addition to passenger service the company announces that it will add trolley freight service over this line as well. The opening of this new line will give a direct electric railway line between Pittsburgh and Beaver Falls.

***Denison, Tex.**—Preliminary surveys are being made for a line betweeen Denison, Dexter and Locust. This is part of a plan to build an electric railway through Pottsboro, Locust, Gordonville, Dexter and Denison.

Houston, Laporte & Bay Shore Railway, Houston, Tex.—Preliminary arrangements are being made and work will be begun some time within the next six months on this line to connect Houston, Pasedana, Deepwater, Deer Park, San Jesenta City, Laporte, Seabrook, Webster, Friendswood and Pearland. The power station will be located at Houston and the repair shops at Pearland. The company will furnish power for lighting purposes. Capital stock, authorized, $2,000,000. Samuel F. George, Houston, president and general manager, and John H. Stoner, Houston, chief engineer.

Houston & Southern Railway, Houston, Tex.—Preliminary arrangements are being made to incorporate this company, which plans to begin work in the spring on its 55-mile electric railway to connect Houston, Pearland, Manville, Danbury, Belasco and Freeport. The company will furnish power for lighting purposes and will locate its power house in Houston and its repair shops at Pearland. It will also have amusement parks at Laporte and at Velasco. Samuel F. George, Dayton, Ohio, president, and John H. Stoner, Houston, chief engineer.

Glen Rose & Walnut Springs Railway, Walnut Springs, Tex.—Grading has been completed by this company for its 14-mile line to connect Glen Rose and Walnut Springs, via Seven Knobs. Officers: J. H. Farr, president; F S. Williams, vice-president; John Shields, treasurer, and F. B. Kirby, secretary, all of Glen Rose. [E. R. J., Sept. 12, '14.]

Rutland Railway, Light & Power Company, Rutland, Vt.—This company, a subsidiary of the General Gas & Electric Company, has begun construction under its plans for the conservation of the water supply at Chittenden Dam, near Rutland, Vt. The plans include the construction of two dams, a canal 3000 ft. long, and wood and steel penstocks. When completed, the reservoirs will furnish a large reserve supply of water for the new power station of the company at East Pittsford. Through this plan the water will be used twice for generation of power, once at the East Pittsford station, and once at the Mendon generating station.

Mercer Electric Railway, Athens, W. Va.—The tracks are being laid by this company on its line between Bluefield and Princeton. This line will connect Bluefield, Princeton and Athens. R. G. Meador, Athens, president. [E. R. J., Oct. 17, '14.]

SHOPS AND BUILDINGS

Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.—This company opened its new depot in Clinton, Ind., on Dec. 3.

Orleans-Kenner Electric Railway, New Orleans, La.—Plans have been prepared by this company to build sixteen shelter houses and way stations along its line between New Orleans and Kenner. The buildings will be on brick construction with tile roofs.

Moncton Tramways, Electricity & Gas Company, Moncton, N. B.—A temporary carhouse was erected to replace the building which was destroyed by fire recently. This building is 30 ft. x 80 ft., with accommodation for five cars, and is on the same site as the one burned. It is the intention of the company to build a steel and brick carhouse in the summer, on a new site which has not yet been acquired.

Brooklyn (N. Y.) Rapid Transit Company.—The Public Service Commission for the First District has approved the award by the New York Municipal Railway Corporation to the P. J. Carlin Construction Company, the lowest bidder, of a contract for the construction of six stations on the Liberty Avenue elevated railroad extension. The contract price is $232,000.

Brantford (Ont.) Municipal Railway.—This company is building a new passenger station and freight house at Paris. The cost is estimated to be $3,000.

Toronto (Ont.) Civic Car Lines.—The City Council has authorized Commissioner Harris to build a temporary carhouse near Dorval Road to house the cars of the new Bloor Street line in Toronto.

Milwaukee Northern Railway, Cedarburg, Wis.—Work will be begun at once by this company on a new terminal building on Fifth Street between Cedar Street and Wells Street in Milwaukee. The structure will be of brick, fireproof, one story high and will be divided into separate waiting rooms, a ticket office and baggage room. The cost is estimated to be about $40,000.

POWER HOUSES AND SUBSTATIONS

Bay State Street Railway, Boston, Mass.—This company has installed a new engine and generator at its Mason Street plant.

Ottawa (Ont.) Electric Ry.—This company's new auxiliary power plant has been put in operation. It cost $200,000 and has a generating capacity of 5000 hp. The equipment includes three Babcock & Wilcox boilers and a Westinghouse double-flow steam turbine.

West Penn Traction Company, Pittsburgh, Pa.—This company has just placed in operation a 19-000-kva, 6600-volt, three-phase, sixty-cycle, turbo generator, built by the Westinghouse Electric & Manufacturing Company.

Monongahela Valley Traction Company, Mairmont, W. Va.—This company is installing three 1500-kva, water-cooled, sixty-cycle, 22,000-volt high-tension Westinghouse transformers, and a complete electrically-equipped remote-control switchboard in its power house near Fairmont, W. Va.

Manufactures and Supplies

ROLLING STOCK

Sheboygan Railway & Electric Company, Sheboygan, Wis., expects to order two new steel cars for city service, double-end operation, pay-as-you-enter, double-truck, to seat forty passengers. The cars will be equipped with baby motors and 24-in. wheels.

Philadelphia & Reading Railroad, Philadelphia, Pa. is making an investigation into the advisability of establishing storage-battery car operation on branch lines of its Winslow Junction-Cape May division.

Empire United Railways, Syracuse, N. Y., has ordered twelve more cars from the St. Louis Car Company in addition to the twelve cars ordered last summer. These twelve cars are to be the same type as those on the previous order.

London & Port Stanley Railway, London, Ont., has ordered three electric locomotives and electrical equipment for five motor cars from the Canadian General Electric Company. The contracts approximate $135,000. The locomotives will be 1000 hp, capable of hauling a trainload of 1000 tons. The cars will have a four-motor electrical equipment of about 600 hp per car. The motor cars and trailers, of which there will be five each, will be of one pattern and steel construction throughout. Tenders on the car bodies were invited up to Dec. 2.

TRADE NOTES

Thomas A. Edison, Inc., West Orange, N. J., in a fire which started early in the evening of Dec. 9, suffered much damage to its property, calculated at something less than $1,000,000. Part of the phonograph works was destroyed by fire, but Mr. Edison's private laboratory, the Storage Battery Company and the Edison primary-battery department were not affected. The company emphasizes the fact that the business of both battery departments of the company will not be interfered with in any way by the fire and that it is prepared to continue business as usual.

Albert Lawrence Smith has been admitted as a partner in the firm of E. B. Smith & Company, public utility bankers, Philadelphia, Pa. Mr. Smith is a son of the senior member of the firm. He attended Harvard University and began his business career with the Franklin National Bank, Philadelphia. For several years he has been associated with the firm of which he is now a partner. He is a director of the Buffalo & Susquehanna Railroad and of the Easton (Pa.) Consolidated Electric Company.

Kerr Turbine Company, Wellsville, N. Y., builder of "Economy" steam turbines, has appointed A. E. Seelig as general sales manager, and John A. Hense as St. Louis representative. Mr. Seelig for several years held a similar position with the L. J. Wing Manufacturing Company, and more recently has managed the new machine tool department in the New York office of Schuchardt & Schutte. Mr. Hense was formerly with the National Malleable Castings Company, Chicago, and later with the Dravo-Doyle Company, Philadelphia.

Walter A. Zelnicker Company, St. Louis, Mo., has appointed Arthur E. Jackman as manager of its machinery department to succeed J. J. Hilpirt, resigned to become storekeeper of the Compania Mexicana de Petroleo "El Aguila," S. A., Tampico, Mexico. Mr. Jackman has had wide experience, gained as general manager of the Sea View Railroad and Narragansett Pier Electric Light & Power Company. He was several years in the railway and lighting department of the Westinghouse Electric & Manufacturing Company, and lately superintendent of the East St. Louis, Columbia & Waterloo Railway, which position he left to assume his present duties.

W. S. Miller has resigned as general superintendent of the St. Louis Car Company, after being connected with this company about fifteen years. Mr. Miller's first position with the company was superintendent of the brass foundry departments, two years after which he became general foreman of the blacksmith, machine and truck departments. After holding this position for three years he was appointed superintendent of machinery and tools. In 1907 Mr. Miller became works manager and later general superintendent, which position he has held up to the time of his resignation, Nov. 9, 1914. He was formerly a student of Washington University, New York.

Edison Storage Battery Company, Orange, N. J., has appointed Francis V. McGinness, formerly sales engineer, as assistant manager of the railway department, the position formerly held by William F. Bauer, who was recently made manager of the company's Chicago office. Mr. McGinness is a graduate of Columbia University's Schools of Applied Science, class of 1910, and before graduation had considerable practical experience with the New York & New Jersey Telephone Company. After a few months in the engineering department of the New York & Queens Electric Light & Power Company, Long Island City, he joined the sales force of the Edison Storage Battery Company. For the past two years he has been identified with the railway department.

National Corrugated Culvert Manufacturers' Association, Chicago, Ill., announces that the large number of manufacturers operating under the Watson corrugated culvert patent have just been informed by their attorney, Wallace R. Lane, Chicago, that the United States Court of Appeals for the Second Circuit, which has final jurisdiction, has just handed down a mandate reversing the lower court and holding this patent valid and infringed by another culvert which was recently installed. The court says, in part: "The patented culvert is cheap, strong, durable, easily transported, quickly laid down and easily repaired. We cannot believe that the man who gave such a structure to the world should be denied the title of an inventor." The manufacturers of corrugated culverts under this important patent make them out of Armco American ingot iron.

ADVERTISING LITERATURE

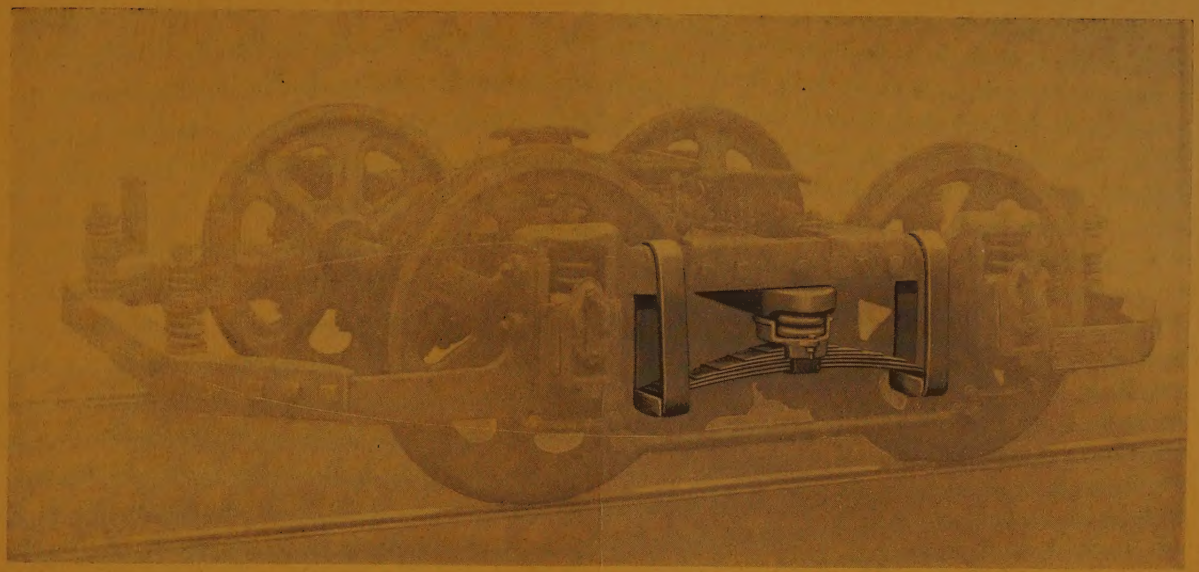
Fargo Manufacturing Company, Inc., Poughkeepsie, N. Y., has issued a bulletin describing its straight connector, cable lug, signal connection, ground point and ground meter, "L," "Y" and "T" and terminal connections.

NEW PUBLICATION

Bonds and Stocks—The Elements of Successful Investing, by Roger W. Babson. Babson Statistical Organization, Inc., Wellesley Hills, Mass. 422 pages and three charts. $2 net.

This is the second book of its kind intended for investors received this year for review by the ELECTRIC RAILWAY JOURNAL and written by an authority of national reputation. There are many excellent books planned primarily for the student of corporation finance, but there has been a dearth of books about the science of investing money. Mr. Babson has in his volume rendered a real service to the man unacquainted with security issues who has money to invest, and in addition he has furnished a volume very entertaining aside from its practicable value. Very hazy ideas are frequently held about securities by men otherwise well informed, and to such men the present volume should be more than welcome. It is all very well for the man unacquainted with finance who intends to invest to be sure of the reputation of the house through which he deals, but there is no excuse now that "Bonds and Stocks" has been issued for such a man not to understand the fundamentals of investing. The strong and weak points of stocks and bonds are pointed out with reasons why some classes of securities are attractive and why others are not attractive. Mr. Babson has divided his work into twenty-four chapters. The first four deal with introductory suggestions, the next fifteen with elements of successful investing and the five concluding chapters with supplementary suggestions. There is a chapter on electric railway securities as distinct from lighting, telephone and water power securities. A chapter on the investor's vocabulary contains an explanation of ten phrases, the meaning of which should be understood by every investor. These phrases are the technical ones used frequently by bankers in seeking subscriptions from the public, through the newspapers. Mr. Babson certainly is justified in saying in his conclusion that "if the reader has absorbed all that has gone before he should have in his mind a clear idea of the different kinds and groups of securities and the various questions and terms involved therewith."

BRILL GRADUATED SPRING SYSTEM



TRUCK SPRINGS are made for maximum loads, and it takes the maximum load to get the best action, the smoothest motion to the car, out of them. This means that the springs are too stiff to give easy riding to the lightly loaded car. And yet cars run lightly loaded most of the time. The Brill Graduated Spring System has two kinds of spring action, one for light loads and one for heavy. Of course there is some play of the semi-elliptics, with the bolster coil springs, but it is the coil springs that give the smooth motion to the lightly loaded carbody, because they are quicker and softer in their action; while the semi-elliptics, being friction springs, are slower and therefore suited to cushion the heavier load. By light loads is meant any load up to nearly a full load of seated passengers; above that load the seat castings of the coil springs come in contact with the bolster, and these springs stop acting. The 76-E Truck is shown in the above illustration. The Brill Graduated Spring System is also a standard feature of the 39-E Single-Motor Truck.

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AMERICAN CAR COMPANY
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G. C. KUHLMAN CAR CO.
Cleveland, Ohio
WASON MANUFACTURING CO.
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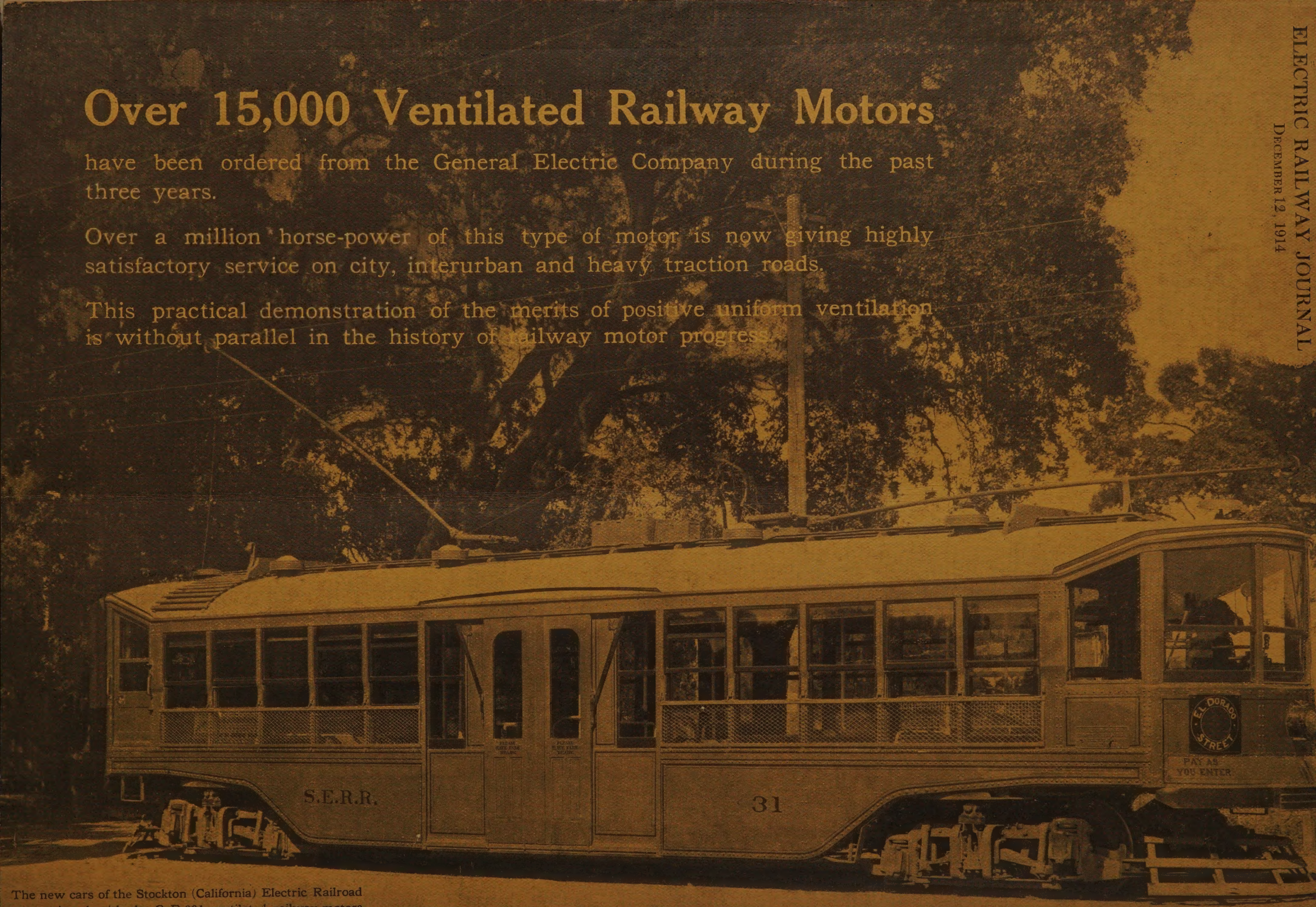
This practical demonstration of the merits of positive uniform ventilation is without parallel in the history of railway motor progress.



The new cars of the Stockton (California) Electric Railroad are equipped with the G-E 201 ventilated railway motors and K control.

General Electric Company